A Relational Theory of Power Alternation*

Zanhui Liu
Tsinghua University
zhliu2018@nsd.pku.edu.cn

Zhaotian Luo†
University of Chicago
luozhaotian@uchicago.edu

Yucheng Qiu
Peking University
ycqiu2018@nsd.pku.edu.cn

Shuyi Yu
University of Chicago
yushuyi@uchicago.edu

August 29, 2025

Abstract

We study the spontaneous emergence of power alternation from the need for cooperation by developing a model in which two parties repeatedly cooperate and negotiate the position of power, defined as the control right of a productive regime. Unless the party in power, "incumbent," compromises, the party out of power, "opposition," would withdraw from cooperation. Central to our analysis are two impediments: the incumbent's hold-up problem and information asymmetry. We establish a recursive structure of the model, taking into account the endogenous roles—incumbent or opposition—the two parties play. We find that alternation of power is necessary to sustain cooperation in the long run, while within-period compromise is essential for efficiency. Two norms are inherent in efficient self-enforcing agreements, prescribing an implicit bargaining protocol and the persistence of power. We characterize the implied dynamics of compromise, legitimacy, and power alternation and illustrate the results in context of the Whig-Tory alternation in England from 1688 to 1830.

*For their helpful comments and suggestions, we thank Álvaro Delgado-Vega, Scott Gehlbach, Robert Gibbons, Roger Myerson, Jack Paine, Spencer Pantoja, James Robinson, Mehdi Shadmehr, Konstantin Sonin, Takuo Sugaya, Yu Fu Wong, Hongding Zhu, and the seminar and conference participants at Great Lakes Political Economy Theory Conference 2025, SITE Political Economic Theory 2025, SIOE Annual Conference 2025.

†Corresponding author.

1. Introduction

At any time, members of a political system are divided into those who govern and those who are governed. Societies thrive on cooperation between these groups, as both must contribute. Trust between the two, however, is inherently fragile, since only those in power distribute. Asymmetric access to information grants rulers an advantage (Fearon, 2011), and the temptation to renege on past commitments once gains have materialized creates a classic hold-up problem (North and Weingast, 1989). These contracting frictions are particularly acute in political contexts, where third-party enforcement—such as courts—is unavailable (Myerson, 2008, 2015).[1] We argue that, to sustain long-term cooperation under such frictions, power alternation may emerge endogenously as a necessary and socially efficient arrangement.

Social arrangements for rotating power among clans, lineages, tribes, factions, or other political groups have appeared independently throughout human history. Examples include ancient Chinese sage kings (Sima, 1993), precolonial Peruvian chiefdoms (Earle, 1997), Native American confederacies (Stasavage, 2020), pirate crews in the Caribbean (Leeson, 2009), and party alternation in eighteenth-century Britain (Brewer, 1976), Sweden (Roberts, 2003) and the United States (Hofstadter, 1969). While power alternation is widely seen as a defining feature of democracy in the modern literature,[2] its deep historical roots across diverse human societies merit further exploration.

For instance, long before Britain's nineteenth-century mass democratic reforms, elites had already begun experimenting with informal practices of power alternation (Hill, 1976; Jones, ed, 1987). These practices emerged in response to mounting religious, political, and economic tensions in the seventeenth century, as elite factions organized into proto-parties and adopted turn-taking arrangements to manage internal conflict (Holmes, 1967; Jones, 1961). The ruling party's informational edge and control over state resources—particularly during times of imperial crisis—highlighted the need for cooperative norms between parties (Brewer, 1989; Simms, 2008). The post-1688 political settlement and the growing supremacy of Parliament created the institutional space for such norms to solidify (North and Weingast, 1989; Pincus, 2009). Over time, Whigs and Tories moved from outright hostility to a more structured

[1] North and Weingast (1989) study the government's hold-up problem in early modern England: with arbitrary power, the sovereign could not commit to upholding private property rights. Fearon (2011) studies information asymmetry between politicians and voters: the voters cannot determine whether their suffering results from politicians' malfeasance or from random shocks beyond the latter's control.

[2] One of its earliest treatments appears in Schumpeter (1942). For more recent literature, see, for instance, Cheibub et al. (2010); Dahl (1971); Huntington (1991); Przeworski (1991). In particular, Przeworski et al. (1996, 2000) propose a minimal definition of democracy, suggesting that "alternation in office constitutes prima facie evidence of contestation."

rivalry, shaped by norms like ministerial responsibility—even as they jointly restricted the electorate to a narrow elite (Plumb, 1967). By the time mass democracy took hold in the nineteenth century, the institutional foundations for party turnover had already been laid through a century of elite negotiation, adaptation, and improvisation (O'Gorman, 1989, 1997). These trajectories show how formal institutions often evolve from long-standing informal practices—a theme emphasized in early institutionalist scholarship (Greif, 1994, 2006; North, 1981, 1991). What appeared to be a sudden democratic innovation was, in fact, the culmination of incremental and informal developments. Still, prevailing theories of democratic origins continue to center on mass-based franchise expansion, leaving the role of elite-initiated norms largely underexplored (Acemoglu and Robinson, 2000, 2001, 2006; Boix, 2003; Lizzeri and Persico, 2004).[3]

In this paper, we study how informal arrangements of power alternation may emerge from the need for ongoing and voluntary cooperation between two parties. Formally, we consider a model in which two parties repeatedly cooperate and negotiate the control right over a productive regime. At the beginning of each period, the control right resides with one party to whom we refer as the *incumbent*, while the other party is the *opposition*. The two parties choose whether to cooperate with each other. If both parties cooperate, the regime generates some revenue with a positive probability; otherwise, they take their outside options. Only the incumbent *privately* observes whether cooperation successfully generates revenue, after which the incumbent *dictates* how to allocate the revenue between the two parties. The opposition, in contrast, knows nothing except for the amount of revenue it receives. At the end of the period, the incumbent decides whether to *abdicate*—to relinquish the control right to the opposition—at a transition cost. *Power alternation* occurs if the incumbent abdicates.

Our framework captures a fundamental problem of trust confronting any political system: cooperation can occur only when the opposition expects the incumbent to make sufficiently generous compromises to compensate for its voluntary participation. Two challenges stand in the way. The first is the incumbent's temptation to renege—a classic hold-up problem. With exclusive authority over revenue allocation, the incumbent cannot credibly commit to sharing

[3]Dahl (1971) proposed that "two different theoretical dimensions of democratization—contestation and inclusiveness—vary somewhat independently. Britain had a highly developed system of public contestation by the end of the eighteenth century, but only a minuscule fraction of the population was fully included in it until after the expansion of the suffrage in 1867 and 1884." A substantial body of scholarship in political science and history argues that Britain's early democratization was driven largely by elite contestation; see, for example, Cowling (1967); Ansell and Samuels (2014); Ziblatt (2017). By contrast, Acemoglu and Robinson (2001) locate the origins of Britain's mass democracy in the nineteenth-century Reform Acts: "Most Northern European countries extended the franchise during the late nineteenth and early twentieth centuries, and succeeded in consolidating mass democracy. For example, in Britain, following the first tentative reforms of 1832, voting rights were significantly extended in 1867 and in 1884."

any with the opposition. The second impediment is information asymmetry: the opposition cannot determine whether a breach of promise stems from deliberate appropriation by the incumbent or simply from an unlucky shortfall of revenue.[4]

Trust between the two parties is inherently fragile under these two contracting frictions. We first show that without power alternation, cooperation must break down in finitely many periods. There exists no equilibrium that accommodates both power entrenchment and unceasing cooperation in the long run. Intuitively, the incumbent must compromise and compensate for the opposition's participation by sharing revenue within each period. Such a promise, however, is inevitably broken when the regime fails to yield revenue. In the presence of information asymmetry, dynamic incentives for within-period compromises thus entail the need for on-path punishments. After consecutive breaches of promises, the punishment becomes so severe that the incumbent would rather repudiate any compromise and let cooperation dissolve thereafter. Hence, in any self-enforcing agreement, power alternation is necessary to sustain cooperation in the long run.

In principle, in a self-enforcing agreement, the opposition can be compensated intertemporally via power alternation alone, which makes on-path punishments for the incumbent unnecessary. Following this logic, we construct a class of equilibria to which we refer as *electoral equilibria*. On the path of play in each electoral equilibrium, the two parties cooperate, while the incumbent takes all the revenue but, at the end of each period, it abdicates and yields the control right to the opposition with a given probability. We show that electoral equilibria exist when the parties are sufficiently patient. Nevertheless, they are Pareto dominated so long as power alternation entails a nontrivial transition cost. Replacing a small amount of intertemporal compensation with credible revenue sharing within-period improves social welfare while keeping the opposition participating. Hence, even though the alternation of power can restore long-run cooperation, within-period compromise in the form of revenue sharing remains necessary for efficiency.

An immediate question is whether unceasing cooperation is possible in an efficient equilibrium. If so, our prior analysis then suggests that both power alternation and within-period compromise are essential components of self-enforcing agreements.[5] In

[4]These two contracting frictions are inherent to the position of power and are observed across early political systems. Examples include the rationing of grain stored in state granaries or temples in the Sumerian city-states and the Egyptian kingdom (Finer, 1997); the monopolization of prestige-goods exchange by chiefs in Bronze Age Denmark (Earle, 1997); and the division of spoils by Atlantic pirate captains among their crews (Leeson, 2009). These essential impediments underlie many institutional devices explicitly designed to enable trust and cooperation between those in power and those out of power. See, for instance, constitution in North and Weingast (1989), regularly held elections in Fearon (2011), courts in Myerson (2008), and parliaments in Boix and Svolik (2013).

[5]Kelsen (1929) and Schumpeter (1942) are the earliest to positively theorize democracy. They provide distinct views on successful democracies, which boil down to the emphases on within-period compromise

particular, the endogenous evolution of power should exhibit memory on the path of play, rather than a Markovian structure as in electoral equilibria or previous works in political economy (for instance, Alesina 1988; Dixit et al. 2000). Our second main result establishes that every efficient equilibrium features unceasing cooperation—and hence unceasing power alternation—if and only if the parties are sufficiently patient and the transition cost is not too high. Thus, absent any formal institution to eliminate either the hold-up problem or information asymmetry, informal arrangements of power alternation could emerge endogenously from efficient self-enforcing agreements to facilitate long-run cooperation.

From a technical perspective, the possibility of renegotiation over the control right poses a challenge in characterizing efficient equilibria: the continuation game after power alternation differs from the original game. To characterize the set of equilibrium payoffs with one party being the initial incumbent, we must know as a prerequisite the corresponding set when the control right resides initially with the other party—and vice versa. To address this difficulty, we extend the self-generation approach developed by Abreu et al. (1990) and establish a recursive structure of our model. The extended approach enables us to formalize the relationship among efficiency, unceasing cooperation, and power alternation. Then, building on this recursive structure, we derive a sharp geometric characterization of the sets of equilibrium payoffs and those of continuation values. These results allow us to identify behaviors in an efficient equilibrium.

We start by establishing a critical relationship between compromise and efficiency: any utility transfer from the incumbent to the opposition reduces the joint welfare. Intuitively, whereas compromise in the form of revenue sharing *per se* pertains only to the division of the surplus, maintaining its credibility is socially costly, as on-path punishments are essential due to information asymmetry and ultimately entail costly power alternation. The stark implication is that efficiency requires each incumbent to minimize compromise throughout its incumbency, insofar as dynamic incentives remain effective and the opposition continues to cooperate. Consistently, our geometric characterization of sets of continuation values implies two norms that guide the alternation of power in efficient equilibria.

On the one hand, the *norm of almighty inauguration* prescribes how the relationship between the two parties continues under a new incumbency. We show that every inaugurating incumbent must be endowed with the maximally advantageous position in the beginning of its new incumbency. Whenever power alternation is specified by an efficient equilibrium, the abdicating incumbent expects the minimal continuation value that makes

and alternation of power, respectively, in sustaining voluntary cooperation between the incumbent and the opposition (for a summary, see Przeworski 2025). Our analysis thereby echoes—and bridges—their views by elucidating how both of them are essential for efficient self-enforcing cooperative arrangements.

it indifferent between relinquishing the control right and taking its outside option. An important interpretation of this norm is that efficient self-enforcing agreements involve a simple implicit bargaining protocol for the two parties to negotiate control right. If the incumbent initiates the negotiation, the opposition offers a proposal for the continuation play after transitioning to the new incumbency. Then, the incumbent decides whether to accept the proposal and yield power, or to reject it and take the outside option thereafter. The *norm of backloaded abdication*, on the other hand, prescribes the endogenous persistence of power. We show that in any efficient equilibrium, each incumbency is sustained so long as within-period compromise can be credibly promised. More precisely, an incumbent compromises via revenue sharing to postpone the relinquishment of the control right as further as possible into the future, unless and until power alternation becomes necessary for continuing cooperation.

We further elaborate on the dynamics of power and compromise in efficient equilibria. In particular, we interpret the incumbent's continuation payoff as its level of *legitimacy*, which encodes all payoff-relevant aspects of the history and determines the incumbent's compromise on revenue sharing and the prospect of power alternation. An incumbent's legitimacy declines whenever its promise of revenue sharing is broken following the regime's failure to generate revenue, and recovers otherwise. Decreased legitimacy then results in a more generous within-period compromise. After experiencing consecutive breaches of promises, the current incumbency deteriorates into *precarity* under which a single failure precipitates power alternation with positive probability. In contrast, as legitimacy accrues, the incumbent may attain a transient *hegemony* under which the control right is securely retained. Finally, depending on whether hegemony is possible and whether it can be established at the beginning of an incumbency, we delineate three types of political dynamics, all of which hinge on the need for cooperation.

Here is an outline of the remainder of the paper. Section 2 describes the model. Section 3 elucidates impediments to cooperation and shows why without power alternation, cooperation must necessarily dissolve in the long run. Section 4 illustrates how power alternation helps sustain unceasing cooperation via defining and analyzing electoral equilibria, and then establishes the necessary and sufficient condition for unceasing cooperation in efficient equilibria. Section 5 contains our main results regarding the norms and dynamics of power alternation that endogenously arise in efficient equilibria. Section 6 situates our findings in the context of the Whig-Tory alternation in England. Section 7 concludes. Omitted statements and proofs are in Appendix A and Appendix B. The rest of the introduction places our work within the literature.

Related literature

This paper contributes to the understanding of the evolution of power and compromise. Dixit et al. (2000), an important precursor which is then followed by numerous studies in political economy (see, for instance, Acemoglu et al., 2011; Aguiar and Amador, 2011; Delgado-Vega, 2025; Delgado-Vega and Schneider, 2024; Liao and McClellan, 2023), analyze an infinite-horizon model in which the party in power decides the allocation to the party out of power. Instead of considering negotiation of the control right over time, they assume that the evolution of power follows an exogenously given Markov process.[6] Furthermore, their model features intertemporal risk sharing with limited commitment and perfect information. Fluctuation of power is therein the prerequisite for sustainable within-period compromise, rendering continuation punishment after a deviation possible. In contrast, we model explicitly the need for cooperation in each period and investigate how the hold-up problem and information asymmetry shape the endogenous evolution of both within-period compromise and intertemporal alternation of power.

Our work joins the political economy literature that studies the endogenous persistence and transition of power (see, for instance, Acemoglu and Robinson, 2008; Acemoglu et al., 2008, 2012, 2015; Luo et al., 2024). Most papers focus on Markovian strategies. We complement them by showing how the evolution of power features history dependence. One exception in this literature is Acharya et al. (2025) who model the relationship between the voter and an incumbent as a fixed principal-agent interaction with moral hazard. They find that the persistence of an incumbent's power is also history-dependent in the voter-optimal equilibrium and each incumbent is eventually replaced with a new politician after bad track record. In contrast, our work shows how power evolves when the roles that the parties play—incumbent or opposition—in their ongoing relationship are endogenous.

Our focus on ongoing negotiation over the control right connects to the study of decision rights in the relational contracting literature. Fixing the party with whom the control right resides, Baker et al. (1999) and Li et al. (2017) analyze the sustainability and dynamics of informal decision rights, which they interpret as power, in organizations. Instead, we model power explicitly as the control right *per se* and allow for negotiation over power alternation at the end of each period. Rayo (2007) and Ferreira and Li (2025) study the optimal structure of power designed to sustain relational contracts in dynamic environments featuring moral hazard in teams (Holmström, 1982). By focusing on the alternation of power in efficient self-enforcing agreements, our analysis offers a complementary perspective on how inherent

[6] Delgado-Vega and Schneider (2024) and Delgado-Vega (2025) partially endogenize power alternation between two parties in relational contracting environments, considering models in which the support of a long-run player influences the evolution of power between two parties.

norms underlie the intertemporal distribution of the control right.

Possibility of power alternation pertains to renegotiation and bargaining in repeated games. In contrast to existing works in this literature (see, for instance, Halac, 2015; Miller and Watson, 2013; Safronov and Strulovici, 2018; Watson et al., 2020), we introduce neither an explicit protocol nor a cooperative solution. As we show, the norm of almighty inauguration is inherent in efficient self-enforcing agreements, prescribing an implicit bargaining protocol for the parties to negotiate the continuation play.

Finally, we contribute to the dynamic contracting literature in which the party who makes within-period compromises has private information. Closest to our model are Li and Matouschek (2013) and Yared (2010), both of whom analyze models in which the party has to break promises on within-period compromises after privately observing a negative shock.[7] They find dynamics of compromises and continuation payoffs analogous to ours. In particular, in both papers, the party compromises on concessions to postpone inefficiencies—decline in effort provision in Li and Matouschek (2013) and war in Yared (2010).[8] While our work and theirs share some common threads, the core of our analysis is the possibility of power alternation, which fundamentally changes the analytic structure of the model. A few papers analyze models of dynamic moral hazard, in each of which the principal has private information about either the persistent outside option (Halac, 2012) or the agent's performance (Levin, 2003; Fuchs, 2007). They show that the optimal contract necessitates on-path termination. Their findings thus resonate our result that no equilibrium can accommodate power entrenchment and unceasing cooperation.

2. Model

The players are two *parties*, $i \in \{0,1\}$, who jointly control a productive regime. Time is discrete and indexed by $t \in \{0,1,2,...\}$. At the beginning of each t, the two parties choose whether to cooperate with each other, $c_{i,t} \in \{0,1\}$ for each i. If either chooses not to cooperate, $c_{0,t}c_{1,t} = 0$, each i receives a reservation value $\underline{u}_i > 0$ from its outside option. *Cooperation* occurs if $c_{0,t}c_{1,t} = 1$, in which case the regime may generate some revenue with the size normalized to 1. Whether the regime succeeds or fails to generate revenue,

[7] Other papers in this literature, which are only indirectly pertinent, include Abdulkadiroglu and Bagwell (2013); Fahn and Klein (2019); Hauser and Hopenhayn (2008); Hörner and Sanktjohanser (2025); Thomas and Worrall (1990).

[8] Several papers in this literature (see, e.g., Ales et al., 2014; Li et al., 2023) also feature similar dynamics. In particular, Ales et al. (2014) study how political and economic cycles are driven by limited commitment and private information on the side of the policymaker. Focusing on political turnover, rather than power alternation, they show that each incumbent is eventually replaced by a new policymaker after consecutive negative shocks on the equilibrium path.

$r_t \in \{0,1\}$, is stochastic and follows a stationary distribution that $\Pr(r_t = 1) = q \in (0,1)$.

One party, $I_t \in \{0,1\}$, is in *power* at t and is referred to as the *incumbent*, while the other party, $1 - I_t$, is out of power and referred to as the *opposition*. The position of power entails two privileges: the sole authority in revenue allocation and the monopolistic access to information. In particular, the incumbent *privately* observes whether the regime successfully generates revenue, r_t, and if $r_t = 1$, the incumbent *dictates* how to allocate the revenue between the two parties by choosing an amount $x_t \in [0,1]$ to share with the opposition. The opposition has no voice on how the revenue is distributed and is only aware of the amount it receives,

$$s_t := r_t x_t.$$

Hence, if the opposition receives no revenue, $s_t = 0$, it cannot tell whether this is because the regime fails to generate any revenue, $r_t = 0$, or because the incumbent withholds all the revenue the regime generates, $r_t = 1$ but $x_t = 0$.

At the end of t, the incumbent makes a decision, $a_t \in \{0,1\}$, on whether to *abdicate*, yielding power to the opposition, at a transition cost of $k > 0$. *Power alternation* occurs if $a_t = 1$, in which case the opposition at t becomes the incumbent at $t+1$, $I_{t+1} = 1 - I_t$.

The stage game at each t begins with the identity of the incumbent, I_t, being publicly observed and has the following sequence of moves.

1. *Each party i publicly and simultaneously chooses whether to cooperate, $c_{i,t} \in \{0,1\}$.*
2. *If $c_{0,t}c_{1,t} = 1$, whether the regime generates revenue, $r_t \in \{0,1\}$, realizes.*
3. *The incumbent I_t privately observes r_t and allocates revenue, $x_t \in [0,1]$, if $r_t = 1$.*
4. *The opposition $1 - I_t$ observes and consumes $s_t = r_t x_t$, while I_t consumes $r_t - s_t$.*
5. *I_t publicly chooses whether to abdicate, $a_t \in \{0,1\}$.*

The initial incumbent, $I_0 \in \{0,1\}$, is exogenously given and the incumbent at each $t \geq 1$ is endogenously determined via

$$I_t = (1 - c_{0,t-1}c_{1,t-1}a_{t-1})I_{t-1} + c_{0,t-1}c_{1,t-1}a_{t-1}(1 - I_{t-1}).$$

The two parties observe two public signals, $\zeta_t, \eta_t \in [0,1]$, independently drawn from the uniform distribution. ζ_t is observed right before step 1, which allows public randomization of all decisions other than abdication. η_t is observed between step 4 and 5, which allows public randomization of power alternation.

The flow payoff each party i receives at t is

$$c_{i,t}c_{1-i,t}y_{i,t} + (1 - c_{i,t}c_{1-i,t})\underline{u}_i,$$

where

$$y_{i,t} := \begin{cases} r_t - s_t - a_t k, & I_t = i \\ s_t, & I_t = 1 - i \end{cases}$$

is its flow payoff under cooperation. Both parties are forward looking and share a common discount factor $\delta \in (0, 1)$. All payoffs are normalized as per-period averages.

The solution concept is *perfect public equilibrium* (equilibrium). The two parties can condition their strategies on the public history of play: $h^0 := I_0$ and for each $t \geq 1$,

$$h^t := (h^{t-1}, \zeta_{t-1}, c_{0,t-1}, c_{1,t-1}, s_{t-1}, \eta_{t-1}, a_{t-1}, I_t).$$

The set of all histories is denoted as $\mathcal{H}$. A strategy profile σ specifies for each party i three decisions, $(C_i^\sigma, X_i^\sigma, A_i^\sigma)$, where for each history $h^t \in \mathcal{H}$, first, $c_{i,t} = C_i^\sigma(\zeta_t|h^t) \in \{0, 1\}$ is party i's decision on whether to cooperate given the realization of ζ_t; second, $x_t = X_i^\sigma(\zeta_t|h^t) \in [0, 1]$ party i's revenue allocation decision given that it holds power, $I_t = i$, the realization of ζ_t, that both parties cooperate, $c_{0,t}c_{1,t} = 1$, and that the regime successfully generates revenue, $r_t = 1$; at last, $a_t = A_i^\sigma(\zeta_t, s_t, \eta_t|h^t) \in \{0, 1\}$ is party i's abdication decision given that it holds power, $I_t = i$, the realization of ζ_t, that both parties cooperate, $c_{0,t}c_{1,t} = 1$, the amount of revenue the opposition receives, s_t, and the realization of η_t. At the beginning of each t, given the history h^t, σ induces the payoff of

$$U_i(\sigma|h^t) := \mathbb{E}^\sigma \left((1 - \delta) \sum_{\tau=t}^{\infty} \delta^{\tau-t} \left(c_{i,t}c_{1-i,t}y_{i,t} + (1 - c_{i,t}c_{1-i,t})\underline{u}_i \right) \mid h^t \right)$$

for each party i.

A strategy profile is an *equilibrium* if following each history, each decision it prescribes for each party is optimal for that party given all the other decisions. An equilibrium is *efficient* if it maximizes the total surplus at the beginning of $t = 0$ among all possible equilibria. Formally, let Σ denote the set of all equilibria and $\Sigma^* \subseteq \Sigma$ denote the set of all efficient equilibria. First, $\sigma \in \Sigma$ if for each $h^t \in \mathcal{H}$ and each $i \in \{0, 1\}$,

$$C_i^\sigma(\zeta_t|h^t) \in \arg \max_{c_{i,t} \in \{0,1\}} \mathbb{E}^\sigma \left((1 - \delta) \left(c_{i,t}c_{1-i,t}y_{i,t} + (1 - c_{i,t}c_{1-i,t})\underline{u}_i \right) + \delta U_i(\sigma|h^{t+1}) \mid h^t, \zeta_t, c_{i,t} \right)$$

holds for all $\zeta_t \in [0,1]$;

$$X_i^\sigma(\zeta_t|h^t) \in \arg\max_{x_t\in[0,1]} \mathbb{E}^\sigma\left((1-\delta)y_{i,t} + \delta U_i(\sigma|h^{t+1}) \mid h^t, \zeta_t, c_{0,t}=1, c_{1,t}=1, s_t = x_t\right)$$

holds for all $\zeta_t \in [0,1]$, given that $I_t = i$ and $r_t = 1$; and

$$A_i^\sigma(\zeta_t, s_t, \eta_t|h^t) \in \arg\max_{a_t\in\{0,1\}} \mathbb{E}^\sigma\left(-(1-\delta)a_t k + \delta U_i(\sigma|h^{t+1}) \mid h^t, \zeta_t, c_{0,t}=1, c_{1,t}=1, s_t, \eta_t, a_t\right)$$

holds for all $\zeta_t, s_t, \eta_t \in [0,1]$, given that $I_t = i$. Second, $\sigma \in \Sigma^*$ if

$$U_0(\sigma|I_0) + U_1(\sigma|I_0) \geq U_0(\sigma'|I_0) + U_1(\sigma'|I_0)$$

holds for all $\sigma' \in \Sigma$. Throughout, the subscript "t" is suppressed whenever it causes no confusion and the following assumption is imposed.

Assumption 1. $\underline{u}_0 + \underline{u}_1 < q$.

Assumption 1 implies that the regime is a profitable asset: it is *efficient* for the two parties to always cooperate and share the revenue the regime generates.[9]

3. Difficulty of cooperation

Two contracting frictions make sustaining cooperation difficult. The first is the incumbent's *hold-up problem*. Because the incumbent has the sole authority in revenue allocation, it could appropriate all the revenue the regime generates under cooperation, leaving the opposition nothing to consume. The second contracting friction is the *information asymmetry* created by the incumbent's monopolistic access to information. Because only the incumbent knows whether the regime generates any revenue, it could embezzle all the revenue and use the failure of the regime to generate revenue as an excuse for not sharing with the opposition. In what follows, we show that under these two contracting frictions, cooperation cannot be sustained in the long run without power alternation.

Definition 1. An equilibrium $\sigma \in \Sigma$ has

1. *unceasing cooperation* if on the equilibrium path of σ, $c_{0,t}c_{1,t} = 1$ holds for all t;
2. *power entrenchment* if on the equilibrium path of σ, there exists a T such that $a_t = 0$ for all $t \geq T$.

[9]The game is trivial when this fails: cooperation is impossible because no matter how the revenue is allocated, at least one party prefers its outside option.

Namely, in an equilibrium with unceasing cooperation, the two parties always cooperate. In an equilibrium with power entrenchment, one of the two parties eventually monopolizes power: for all $t \geq T$, $a_t = 0$, so that $I_t = I_T$.

Theorem 1. *There exists no equilibrium with both unceasing cooperation and power entrenchment.*

Theorem 1 implies that power alternation is *necessary* to sustain unceasing cooperation. Formally, if σ is an equilibrium with unceasing cooperation, then it cannot have power entrenchment. This requires that on the equilibrium path of σ, for any time T, power alternation must occur at some future time $t \geq T$, so that $a_t = 1$ and $I_{t+1} \neq I_t$. In other words, power cannot stop alternating between the two parties in this equilibrium.

Why cannot cooperation last without power alternation? Let σ be an equilibrium with power entrenchment. Consider any $t \geq T$ after power has stopped alternating. Suppose $I_t = i$, the two parties cooperate at t, and let u_i be the incumbent's payoff in σ at the beginning of t.

First, because the opposition's payoff at the beginning of t must be at least $\underline{u}_{1-i}$ and because the total surplus is at most q,

$$u_i \leq q - \underline{u}_{1-i} < q. \tag{1}$$

Second, to sustain cooperation at t, the incumbent must promise to share some revenue $x > 0$ with the opposition.[10] To make the promise credible, the incumbent must have two continuation values, the "punishment" u_i' for breaking the promise and the "reward" u_i'' for honoring the promise, and the difference between these continuation values must be sufficiently large,

$$(1 - \delta)x \leq \delta(u_i'' - u_i'), \tag{2}$$

so that the incumbent prefers to honor its promise.

Third, if the regime generates no revenue at t, $r = 0$, the incumbent is unable to share any revenue with the opposition and thus would be punished by receiving the continuation value of u_i'. The punishment cannot be excused because the opposition cannot tell whether it receives no revenue because of the unfortunate failure of the regime to generate revenue

[10]The requirement $x > 0$ is without loss of generality: if the incumbent never shares any revenue with the opposition since T, then the opposition should have taken its outside option at each $t \geq T$.

or because of the incumbent's deliberate appropriation. Hence,

$$u_i = (1-q)\overbrace{\delta u_i'}^{r=0} + q\overbrace{\left((1-\delta)(1-x)+\delta u_i''\right)}^{r=1}. \tag{3}$$

Hence, on the one hand, conditions (1), (2), and (3) together imply that

$$u_i' \leq \frac{1}{\delta}u_i - \frac{1-\delta}{\delta}q < u_i. \tag{4}$$

In other words, if the two parties cooperate at t and the regime fails to generate revenue, then the incumbent's continuation value, that is, its payoff at the beginning of $t+1$, must be strictly worse than its payoff at the beginning of t.[11] On the other hand, the payoff party i gets as the incumbent under cooperation must be at least

$$\hat{u}_i := (1-\delta)q + \delta\underline{u}_i,$$

which is its payoff by appropriating all the revenue and opting for its outside option every period afterwards.

Now suppose cooperation has persisted from t to $\tau-1$, where $\tau \geq t+1$, yet the regime consecutively failed to generate revenue. Then, inductively applying (4) on u_i implies that at the beginning of τ, the incumbent's payoff must drop to some

$$u_i^\tau \leq \frac{1}{\delta^{\tau-t}}u_i - \frac{1-\delta^{\tau-t}}{\delta^{\tau-t}}q < \hat{u}_i,$$

where the second inequality holds when τ is sufficiently large. This implies that cooperation cannot be sustained at τ: if the two parties were to cooperate, the incumbent would get at least $\hat{u}_i$.

4. Unceasing cooperation

4.1. Electoral equilibrium

Definition 2. For $\mathbf{p} = (p_0, p_1) \in [0,1]^2$, $\sigma^{\mathbf{p}}$ is an *electoral equilibrium* with the *electoral rule* of $\mathbf{p}$ if $\sigma^{\mathbf{p}} \in \Sigma$ and on the equilibrium path of $\sigma^{\mathbf{p}}$, $c_{0,t}c_{1,t} = 1$, $x_t = 0$, and $a_t = 1$ with probability p_{I_t} hold for all t.

An electoral equilibrium $\sigma^{\mathbf{p}}$ has three defining features. First, it must have unceasing

[11] If the continuation value consists of randomization, then it must assign positive probability to at least one u_i' for which (4) holds.

cooperation. Hence, by Theorem 1, this equilibrium cannot have power entrenchment, which requires $p_0, p_1 > 0$. Second, the incumbent never shares any revenue with the opposition. Third, to sustain cooperation, the incumbent compensates the opposition intertemporally by yielding power. The opposition's incentive to cooperate comes from the possibility of itself becoming the incumbent in the future. Moreover, the alternation of power is *Markovian* in this equilibrium. Every period under party i's incumbency, transition to party $1-i$'s incumbency occurs with a fixed probability $p_i > 0$. Namely, this is as if party i is regularly holding elections in which it loses and yields office to party $1-i$ with probability p_i.

At the beginning of each period, $\sigma^{\mathbf{p}}$ induces two possible payoffs for each i depending on whether it holds power: $\overline{u}_i^{\mathbf{p}} := U_i(\sigma^{\mathbf{p}}|I=i)$ and $\underline{u}_i^{\mathbf{p}} := U_i(\sigma^{\mathbf{p}}|I=1-i)$. By definition,

$$\begin{aligned}\overline{u}_i^{\mathbf{p}} &= (1-\delta)q + (1-p_i)\delta\overline{u}_i^{\mathbf{p}} + p_i\left(-(1-\delta)k + \delta\underline{u}_i^{\mathbf{p}}\right)\\ \underline{u}_i^{\mathbf{p}} &= (1-p_{1-i})\delta\underline{u}_i^{\mathbf{p}} + p_{1-i}\delta\overline{u}_i^{\mathbf{p}},\end{aligned}$$

solving

$$\begin{aligned}\overline{u}_i^{\mathbf{p}} &= \frac{1-\delta+\delta p_{1-i}}{1-\delta+\delta(p_0+p_1)}(q-p_ik)\\ \underline{u}_i^{\mathbf{p}} &= \frac{\delta p_{1-i}}{1-\delta+\delta(p_0+p_1)}(q-p_ik).\end{aligned}$$

For $\sigma^{\mathbf{p}}$ to be an equilibrium, three conditions must hold for each i. First, party i must be willing to cooperate when in power, which requires

$$\overline{u}_i^{\mathbf{p}} \geq \underline{u}_i. \tag{5}$$

Second, party i must be willing to cooperate when out of power, which necessitates

$$\underline{u}_i^{\mathbf{p}} \geq \underline{u}_i. \tag{6}$$

Third, abdication must be incentive compatible for party i when it holds power, so that

$$\underline{u}_i^{\mathbf{p}} - \frac{1-\delta}{\delta}k \geq \underline{u}_i \tag{7}$$

must hold. Clearly, (7) implies (6) and (5).

Proposition 1. *Suppose $k \approx 0$. Then, there exists an electoral equilibrium if and only if*

$$\delta > \delta^* := \max\left\{\frac{\underline{u}_0}{q-\underline{u}_1}, \frac{\underline{u}_1}{q-\underline{u}_0}\right\};$$

and if $\delta > \delta^*$, the total surplus in each electoral equilibrium approximates the first-best level, q.

Recall that by Theorem 1, to sustain unceasing cooperation, it is necessary for the two parties to keep alternating power. Proposition 1 shows a *sufficient* condition. If the transition cost associated with power alternation is trivial, then as long as the two parties are sufficiently patient, unceasing cooperation can be sustained in at least one electoral equilibrium $\sigma^{\mathbf{p}}$ through regularly alternating power according to a given electoral rule $\mathbf{p}$. This equilibrium does not only sustain long-term cooperation, it also provides the two parties with a total surplus that approximates the first-best level. Through regularly alternating incumbencies, the two parties divide up all the revenue the regime generates intertemporally. Each gets a fair share, so that both are interested to continue cooperating with each other.

Proposition 2. *If $k > 0$, then every electoral equilibrium is Pareto dominated.*

As shown in Proposition 2, as long as the transition cost is nontrivial, any electoral equilibrium must be Pareto dominated and cannot be efficient. Intuitively, compensating the opposition intertemporally via power alternation is socially costly because it involves the transition cost, while revenue sharing with the opposition within a period is not socially costly per se. This indicates that the incumbent might be able to increase the total surplus by making power alternation less likely and offsetting the opposition's loss by sharing some revenue. In Appendix B, we show that for any electoral equilibrium, a Pareto superior equilibrium can be constructed, in which one party, while in power, shares a nontrivial amount of revenue with the other party in exchange for a smaller probability of abdication.

4.2. The program

Our analysis shows that while unceasing cooperation can be sustained in some equilibrium with on-path power alternation, this does not necessarily translate into efficiency. In the rest of this section, we identify the condition under which each efficient equilibrium must have unceasing cooperation. To this end, we first describe the program inherent to efficient equilibria, which helps elucidate how the analytical structure of our model deviates from that of a canonical repeated game and the associated technical challenge confronting us.

If $I_0 = i$, the pair of payoffs the two parties receive from any efficient equilibrium at $t = 0$ must solve

$$\sup_{(u_i, u_{1-i}) \in \mathcal{E}_i} (u_i + u_{1-i}),$$

where for each i,

$$\mathcal{E}_i := \{(U_i(\sigma | I_0 = i), U_{1-i}(\sigma | I_0 = 1 - i)) : \sigma \in \Sigma\}$$

is the set of equilibrium payoffs under party i's incumbency. This set contains all the pairs of payoffs the two parties can derive from the on-path play of an equilibrium that starts with party i holding power.

Obviously, each party always taking its outside option constitutes an equilibrium, so that $(\underline{u}_i, \underline{u}_{1-i}) \in \mathcal{E}_i$. In general, each $(u_i, u_{1-i}) \in \mathcal{E}_i$ can be supported by the two possible pure action profiles, *no cooperation* and *cooperation*, or by randomization between these pure action profiles via the public signal ζ. No cooperation means that the equilibrium that induces (u_i, u_{1-i}) begins with at least one party choosing not to cooperate, while cooperation means that it begins with both parties choosing to cooperate. In Appendix A, we prove that if there is any $(u_i, u_{1-i}) \in \mathcal{E}_i$ such that $(u_i, u_{1-i}) \neq (\underline{u}_i, \underline{u}_{1-i})$, then there must exist another $(u'_i, u'_{1-i}) \in \mathcal{E}_i$ supported by the pure action of cooperation such that $(u'_i, u'_{1-i}) \neq (\underline{u}_i, \underline{u}_{1-i})$ and satisfies $u'_i \geq u_i$ and $u'_{1-i} \geq u_{1-i}$. Hence, in what follows, it is without loss of generality to consider only $(\underline{u}_i, \underline{u}_{1-i})$ and equilibrium payoffs supported by the pure action of cooperation.

Now we derive the set of constraints under which cooperation can be enforced. Following Abreu (1988), we assume without loss of generality that all observable deviations are punished by both parties permanently taking their outside options, which results in each i receiving its minmax payoff $\underline{u}_i$.

Promise keeping. The payoff each party receives must be decomposable into two flow payoffs from cooperation and two continuation values corresponding respectively to whether the regime succeeds or fails to generate revenue, r,

$$\text{(PK-I)} \qquad u_i = (1-q)\overbrace{\delta\gamma_i^0}^{r=0} + q\overbrace{\Big((1-\delta)(1-x) + \delta\gamma_i^1\Big)}^{r=1}$$

$$\text{(PK-O)} \qquad u_{1-i} = (1-q)\overbrace{\delta\gamma_{1-i}^0}^{r=0} + q\overbrace{\Big((1-\delta)x + \delta\gamma_{1-i}^1\Big)}^{r=1},$$

where $x \in [0,1]$ is the amount of revenue the incumbent, party i, promises to share with party $1-i$ and $(\gamma_i^r, \gamma_{1-i}^r)$ represent the continuation values the two parties expect right after party i's revenue allocation decision conditional on r.[12]

Individual rationality. Both parties must be willing to cooperate,

$$\text{(IR-I)} \qquad u_i \geq \underline{u}_i$$

$$\text{(IR-O)} \qquad u_{1-i} \geq \underline{u}_{1-i}.$$

[12]The opposition, party $1-i$, observes only the amount of revenue $s = rx$ it receives. But on-path, $s = 0$ if $r = 0$ and $s = x$ if $r = 1$. Hence, when $x = 0$, $(\gamma_i^0, \gamma_{1-i}^0) = (\gamma_i^1, \gamma_{1-i}^1)$; and when $x > 0$, $(\gamma_i^0, \gamma_{1-i}^0)$ is expected when $s = 0$ and $(\gamma_i^1, \gamma_{1-i}^1)$ is expected when $s = x$.

Credibility. Party i's promise to share x with party $1-i$ must be credible: when the regime generates revenue, $r = 1$, sharing the promised amount x must be incentive compatible for party i,

$$(1-\delta)x \leq \delta(\gamma_i^1 - \gamma_i^0). \tag{CD}$$

Self-enforcement. Most interestingly, for each r, the continuation value $(\gamma_i^r, \gamma_{1-i}^r)$ must be *self-enforcing*: it must be derived from possible equilibrium outcomes in the continuation play. Because the incumbent has the option to abdicate after making its revenue allocation decision, three cases are possible.

First, $(\gamma_i^r, \gamma_{1-i}^r)$ is attained without power alternation. In this case, $(\gamma_i^r, \gamma_{1-i}^r)$ must be a pair of equilibrium payoffs the two parties receive under party i's incumbency at the beginning of the next period,

$$(\gamma_i^r, \gamma_{1-i}^r) \in \mathcal{E}_i.$$

Second, $(\gamma_i^r, \gamma_{1-i}^r)$ is attained with power alternation. In this case, $(\gamma_i^r, \gamma_{1-i}^r)$ is the payoffs the two parties receive from party i abdicating in the current period and the two parties subsequently playing an equilibrium in the next period after transitioning to party $1-i$'s incumbency. On the one hand, abdication must be incentive compatible for party i, which requires

$$\gamma_i^r \geq \underline{u}_i.$$

On the other hand, the payoffs the two parties receives after transitioning to party $1-i$'s incumbency must be derived from the on-path play of an equilibrium that starts with party $1-i$ holding power. This requires

$$\left(\gamma_{1-i}^r, \gamma_i^r + \frac{1-\delta}{\delta}k\right) \in \mathcal{E}_{1-i}.^{13}$$

Hence,

$$(\gamma_i^r, \gamma_{1-i}^r) \in \mathcal{A}_i := \left\{(u_i, u_{1-i}) : u_i \geq \underline{u}_i, \left(u_{1-i}, u_i + \frac{1-\delta}{\delta}k\right) \in \mathcal{E}_{1-i}\right\}$$

must hold in this case, where $\mathcal{A}_i$ contains all pairs of continuation values that are attainable with power alternation under party i's incumbency.

[13] This guarantees that the continuation value party i expects right after its revenue allocation decision, that is, right before abdicating, is

$$\frac{1}{\delta}\left(-(1-\delta)k + \delta\left(\gamma_i^r + \frac{1-\delta}{\delta}k\right)\right) = \gamma_i^r.$$

Third, via the public signal η, $(\gamma_i^r, \gamma_{1-i}^r)$ can be attained by randomizing elements in $\mathcal{E}_i$ and $\mathcal{A}_i$.

Hence, the two continuation values (u_i, u_{1-i}) involves are self-enforcing if and only if

$$\text{(SE-F)} \qquad (\gamma_i^0, \gamma_{1-i}^0) \in \overline{\mathcal{E}}_i$$
$$\text{(SE-S)} \qquad (\gamma_i^1, \gamma_{1-i}^1) \in \overline{\mathcal{E}}_i,$$

where "F" is for failure, "S" is for success, and for each i,

$$\overline{\mathcal{E}}_i := \text{co}(\mathcal{E}_i \cup \mathcal{A}_i)$$

is the set of self-enforcing continuation values under party i's incumbency.

It follows that $(u_i, u_{1-i}) \in \mathcal{E}_i$ is supported by cooperation if and only if it satisfies all the above constraints. Therefore, the program to solve for payoffs in efficient equilibria given that $I_0 = i$ is

$$\text{(P)} \qquad \sup_{u_i, u_{1-i}, x \in [0,1], \gamma_i^0, \gamma_{1-i}^0, \gamma_i^1, \gamma_{1-i}^1} (u_i + u_{1-i}) \; s.t.$$
$$\text{(PK-I)}, \text{(PK-O)}, \text{(IR-I)}, \text{(IR-O)}, \text{(CD)}, \text{(SE-F)}, \text{(SE-S)} \; \textit{if} \; (u_i, u_{1-i}) \neq (\underline{u}_i, \underline{u}_{1-i}).$$

An example that satisfies all the constraints is $(\overline{u}_i^{\mathbf{p}}, \underline{u}_{1-i}^{\mathbf{p}})$ that the two parties receive from the electoral equilibrium $\sigma^{\mathbf{p}}$ when the transition cost k is trivial and $\delta > \delta^*$. Here,

$$(\gamma_i^0, \gamma_{1-i}^0) = (\gamma_i^1, \gamma_{1-i}^1) = (1-p_i)(\overline{u}_i^{\mathbf{p}}, \underline{u}_{1-i}^{\mathbf{p}}) + p_i \left(\underline{u}_i^{\mathbf{p}} - \frac{1-\delta}{\delta} k, \overline{u}_{1-i}^{\mathbf{p}} \right) \in \overline{\mathcal{E}}_i$$

and this continuation value is self-enforcing because $(\overline{u}_i^{\mathbf{p}}, \underline{u}_{1-i}^{\mathbf{p}}) \in \mathcal{E}_i$ and due to (7),

$$\left(\underline{u}_i^{\mathbf{p}} - \frac{1-\delta}{\delta} k, \overline{u}_{1-i}^{\mathbf{p}} \right) \in \mathcal{A}_i.$$

4.3. Unceasing cooperation in efficient equilibria

Solving the program (P) requires characterizing the set of equilibrium payoffs under party i's incumbency, $\mathcal{E}_i$. The standard approach of self-generation pioneered by Abreu et al. (1990) applies as long as $\mathcal{E}_i = \overline{\mathcal{E}}_i$. If this is true, then the set of equilibrium payoffs under party i's incumbency generates itself and can be solved recursively: these equilibrium payoffs are supported by themselves serving as self-enforcing continuation values. In our model, however, $\mathcal{E}_i = \overline{\mathcal{E}}_i = \text{co}(\mathcal{E}_i \cup \mathcal{A}_i)$ cannot be taken for granted because party i has the option to

abdicate. In particular, $\mathcal{E}_i = \overline{\mathcal{E}}_i$ fails as long as $\mathcal{A}_i \neq \emptyset$. According to Proposition 1, when the transition cost of power alternation is sufficiently low and $\delta > \delta^*$, $\mathcal{A}_i$ contains at least one pair of continuation values attained in an electoral equilibrium when party i abdicates. If $\mathcal{A}_i \neq \emptyset$, the two parties can expect not only self-enforcing continuation values as equilibrium payoffs under party i's incumbency, but also self-enforcing continuation values via power alternation into party $1-i$'s incumbency. In this case, $\mathcal{E}_i$ can no longer generate itself: because $\overline{\mathcal{E}}_i = \text{co}(\mathcal{E}_i \cup \mathcal{A}_i)$ also depends on $\mathcal{E}_{1-i}$, to characterize $\mathcal{E}_i$, we must first characterize $\mathcal{E}_{1-i}$ and vice versa. In Appendix A, we extend the self-generation approach by Abreu et al. (1990) to establish a recursive structure, in which the dual of equilibrium payoff sets $(\mathcal{E}_0, \mathcal{E}_1)$ generates itself. This extension allows characterizations of the sets of equilibrium payoffs and the sets of self-enforcing continuation values corresponding to both incumbencies.[14]

Lemma 1. *For each $i \in \{0, 1\}$,*

1. *$\mathcal{E}_i$ and $\overline{\mathcal{E}}_i$ are compact and convex;*

2. *$\mathcal{E}_i$ and $\overline{\mathcal{E}}_i$ are increasing in δ and decreasing in $k, \underline{u}_i, \underline{u}_{1-i}$ in the order of set inclusion.*

Lemma 1 shows several useful properties the sets of equilibrium payoffs and the sets of self-enforcing continuation values admit. In particular, the compactness of $\mathcal{E}_i$ ensures that the program (P) must admit at least one solution, so that efficient equilibrium exists, $\Sigma^* \neq \emptyset$. The monotonicity of $\mathcal{E}_i$ implies that the two parties share a larger efficient total surplus when they are more concerned with future—δ is larger, when the transition cost of power alternation is smaller—k is smaller, and when they have worse outside options—$\underline{u}_0$ and $\underline{u}_1$ are lower. Intuitively, the two parties can improve their payoffs over their reservation values only through cooperation. With worse outside options, cooperation is more needed and thus easier to sustain. Power alternation is necessary for cooperation in the long run, so that a lower transition cost makes cooperation easier to sustain.

Theorem 2. *Every efficient equilibrium is with unceasing cooperation if and only if $\delta > \delta^*$ and $k < k^*$, where $k^* > 0$ is increasing in δ and decreasing in $\underline{u}_0, \underline{u}_1$; and if $\delta > \delta^*$ and k approaches 0, the total surplus in each efficient equilibrium approximates the first-best level, q.*

Theorem 2 provides the necessary and sufficient conditions under which unceasing cooperation is sustained in efficient equilibria: the two parties must be sufficiently patient

[14] Early extensions of Abreu et al. (1990)'s recursive approach to dynamic games involving a state variable include Atkeson (1991) and Phelan and Stacchetti (2001). Hörner et al. (2011), Abreu et al. (2020), and Kostadinov and Kuvalekar (2022) are more recent attempts to establish algorithms to compute the set of sequential equilibrium payoffs for discounted stochastic games. For a complete description of the self-generation approach for dynamic games, see Mailath and Samuelson (2006, 192-195).

and the transition cost associated with power alternation must not be too high. Because δ^* is strictly increasing and k^* is decreasing in $\underline{u}_0$ and $\underline{u}_1$, these conditions are easier when the two parties have worse outside options.

Suppose $\delta > \delta^*$ and $k < k^*$ and consider any efficient equilibrium σ. First, by Theorem 2, σ must have unceasing cooperation. Second, by Theorem 1, σ must not have power entrenchment, which implies that on the equilibrium path of σ, the two parties never stop alternating power with each other. Third, by Proposition 2, because σ is efficient and thus is Pareto optimal, it cannot be an electoral equilibrium, so that the two parties must also have some within-period compromise in the form of revenue sharing. Below, we impose the following assumption, characterize the pattern of power alternation and within-period compromise between the two parties that endogenously arises in efficient equilibria, and discuss how this pattern depends on the history of play.

Assumption 2. *$\delta > \delta^*$ and $k < k^*$.*

5. Power alternation in efficient equilibria

5.1. The geometry of equilibrium payoffs and self-enforcing continuation values

To facilitate characterizing the pattern of power alternation that endogenously arises in efficient equilibria, it is helpful to first analyze certain geometric features of the sets of equilibrium payoffs and the sets of self-enforcing continuation values.

For each i, let

$$v_{1-i}(u_i) := \sup \{u_{1-i} : (u_i, u_{1-i}) \in \mathcal{E}_i\}$$

be the largest equilibrium payoff party $1-i$ can have under party i's incumbency, given that party i has u_i; and let

$$\overline{v}_{1-i}(u_i) := \sup \left\{u_{1-i} : (u_i, u_{1-i}) \in \overline{\mathcal{E}}_i\right\}$$

be the largest self-enforcing continuation value party $1-i$ can expect under party i's incumbency, given that party i expects u_i.

Lemma 2. *For each $i \in \{0, 1\}$,*

1. *$(u_i, u_{1-i}) \in \mathcal{E}_i$ if and only if $u_i \in [\underline{u}_i, \overline{u}_i]$ and $u_{1-i} \in [\underline{u}_{1-i}, v_{1-i}(u_i)]$, where $\overline{u}_i > \underline{u}_i$ and v_{1-i} is continuous, concave, and $v_{1-i}(\underline{u}_i) = v_{1-i}(\overline{u}_i) = \underline{u}_{1-i}$;*

2. *$(u_i, u_{1-i}) \in \overline{\mathcal{E}}_i$ if and only if $u_i \in [\underline{u}_i, \overline{u}_i]$ and $u_{1-i} \in [\underline{u}_{1-i}, \overline{v}_{1-i}(u_i)]$, where $\overline{v}_{1-i}$ is continuous, concave, and $\overline{v}_{1-i}(\underline{u}_i) > \overline{v}_{1-i}(\overline{u}_i) = \underline{u}_{1-i}$;*

3. *if* $\sigma \in \Sigma^*$ *and* $(u_i, u_{1-i}) \in \mathcal{E}_i$ *is on the equilibrium path of* σ *and supported by the continuation values* $(\gamma_i^0, \gamma_{1-i}^0)$ *and* $(\gamma_i^1, \gamma_{1-i}^1)$*, then*

$$\gamma_{1-i}^r = \overline{v}_{1-i}(\gamma_i^r)$$

holds for each $r \in \{0, 1\}$ *and*

$$u_{1-i} = v_{1-i}(u_i) = \overline{v}_{1-i}(u_i).$$

The first two points in Lemma 2 are about the shapes of sets $\mathcal{E}_i$ and $\overline{\mathcal{E}}_i$. Both sets are fully characterized by their frontiers. Function v_{1-i} characterizes the set of equilibrium payoffs under party i's incumbency and is referred to as the *payoff frontier* of party i's incumbency, while function $\overline{v}_{1-i}$ characterizes the set of self-enforcing continuation values under party i's incumbency and is referred to as the *continuation value frontier* of party i's incumbency. These two functions admit useful properties.

First, $\overline{v}_{1-i}(\overline{u}_i) = v_{1-i}(\overline{u}_i) = \underline{u}_{1-i}$. This implies that the largest possible equilibrium payoff party i can derive under its own incumbency comes from fully extracting the opposition by making party $1-i$ indifferent in whether to permanently switch to its outside option. Moreover, the largest possible self-enforcing continuation value party i can expect under its own incumbency coincides with its largest possible equilibrium payoff when holding power and thus $(\overline{u}_i, \overline{v}_{1-i}(\overline{u}_i))$ must be attained without power alternation.

Second, $\overline{v}_{1-i}(\underline{u}_i) > v_{1-i}(\underline{u}_i) = \underline{u}_{1-i}$. This implies that the lowest possible equilibrium payoff party i can derive under its own incumbency comes from breakdown of cooperation when both parties permanently switch to their outside options. Moreover, because $\underline{u}_i < \hat{u}_i$ and recall that cooperation can be supported under party i's incumbency only if party i's payoff is at least $\hat{u}_i$, $(\underline{u}_i, \overline{v}_{1-i}(\underline{u}_i))$ must be attained with power alternation into party $1-i$'s incumbency.

The last point of Lemma 2 connects the payoff and continuation value frontiers to efficient equilibria. If a pair of equilibrium payoffs under party i's incumbency is on the path of play in an efficient equilibrium, it must lie on the intersection where the continuation value frontier of party i's incumbency coincides with its payoff frontier. Moreover, the self-enforcing continuation values this pair of equilibrium payoffs involves must lie on the continuation value frontier under party i's incumbency. Therefore, to characterize efficient equilibria, it suffices to characterize the two continuation value frontiers.

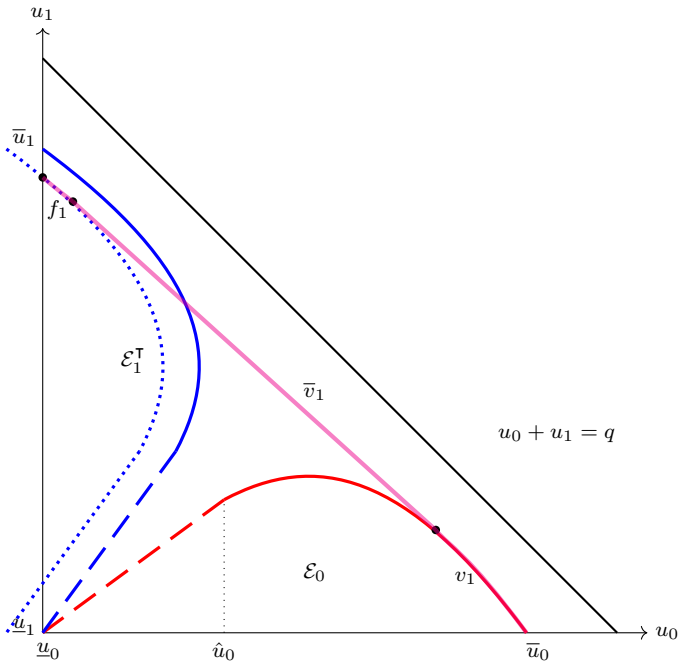
Lemma 3. *For each $i \in \{0,1\}$, $\overline{v}_{1-i}$ is the concavification of $\max\{v_{1-i}, f_{1-i}\}$, where*

$$f_{1-i}(u_i) := \sup\{u_{1-i} : (u_i, u_{1-i}) \in \mathcal{A}_i\}$$

and

1. *$\overline{v}_{1-i}(\overline{u}_i) = v_{1-i}(\overline{u}_i)$ and $\overline{v}_{1-i}(\underline{u}_i) = f_{1-i}(\underline{u}_i) > v_{1-i}(\underline{u}_i)$;*
2. *if $\overline{v}_{1-i}(u_i) = v_{1-i}(u_i)$ for $u_i < \overline{u}_i$, then $\overline{v}_{1-i}(u_i') = v_{1-i}(u_i')$ holds for all $u_i' \in [u_i, \overline{u}_i]$;*
3. *if $\overline{v}_{1-i}(u_i) = f_{1-i}(u_i) > v_{1-i}(u_i)$ for $u_i > \underline{u}_i$, then $\overline{v}_{1-i}(u_i') = f_{1-i}(u_i') > v_{1-i}(u_i')$ holds for all $u_i' \in [\underline{u}_i, u_i]$.*

Figure 1: Concavification



Lemma 3 provides a sharp characterization of the continuation value frontier for each incumbency. Recall that $v_{1-i}(u_i)$ represents the largest equilibrium payoff party $1-i$ can get under party i's incumbency, given that party i has u_i. Likewise, $f_{1-i}(u_i)$ represents the largest equilibrium payoff party $1-i$ can get under its own incumbency right after party i abdicates, given that party i expects u_i right before abdicating. According to Lemma 3, the largest self-enforcing continuation value party $1-i$ can expect under party i's incumbency as a function of what party i expects, $\overline{v}_{1-i}$, must be the smallest possible concave function that everywhere weakly dominates both v_{1-i} and f_{1-i}.

Lemma 3 further implies that $\overline{v}_{1-i}$ has a convenient shape: its graph, as illustrated in Figure 1, can be partitioned into three substantively different sections. The first section is for large u_i's, where $\overline{v}_{1-i}$ coincides with v_{1-i} and each point is attained without power alternation. The second section is for small u_i's, where $\overline{v}_{1-i}$ coincides with f_{1-i} and each point is attained with power alternation. The third section is for intermediate u_i's as a straight line segment connecting the first two sections, where each point is attained through randomizing party i's abdication decision.

5.2. Efficiency and norms of power alternation

Theorem 3. *For each* $i \in \{0, 1\}$,

1. *(Social cost of compromise)* $u_i + \overline{v}_{1-i}(u_i)$ *is strictly increasing in* u_i*;*
2. *(Norm of almighty inauguration)* $(u_i, \overline{v}_{1-i}(u_i))$ *is attained with power alternation,* $\overline{v}_{1-i}(u_i) = f_{1-i}(u_i)$*, if and only if* $u_i = \underline{u}_i$*;*
3. *(Norm of backloaded abdication)* $(u_i, \overline{v}_{1-i}(u_i))$ *is attained without power alternation,* $\overline{v}_{1-i}(u_i) = v_{1-i}(u_i)$*, if and only if* $u_i \geq \hat{u}_i$*.*

The first part of Theorem 3 implies the failure of Coase Theorem, which is reminiscent of Acemoglu (2003).[15] The total surplus in any pairs of self-enforcing continuation values on the frontier is strictly increasing in the incumbent's continuation value. The implication is that any compromise the incumbent makes to the opposition must impose on the two parties a *social cost*. Utility transfer from the incumbent to the opposition always generates welfare loss. The social cost is a product of the incumbent's hold-up problem and information asymmetry. Revenue sharing with the opposition within a period is not socially costly per se. Due to the incumbent's hold-up problem, however, its promise of revenue sharing is credible only if the incumbent is punished after reneging. Due to information asymmetry, the incumbent must be punished and its continuation value must decline whenever the regime fails to generate revenue. After the regime consecutively fails to generate revenue in sufficiently many periods, the incumbent's continuation value declines so much to the extent that cooperation can be sustained in the continuation play only if the incumbent abdicates, yielding power to the opposition. Hence, although revenue sharing itself is not socially costly, its credibility is ultimately derived from future power alternation which generates a transition cost and thus is socially costly. Making credible a more generous compromise in terms of revenue sharing requires a more severe punishment, so that when the regime fails

[15] In contrast to our analysis, Acemoglu (2003) studies how limited commitment—or, in the language of our model, the incumbent's hold-up problem—alone results in the failure of the political Coase Theorem.

to generate revenue, the incumbent's continuation value must drop closer to the point where the continuation play involves socially costly power alternation.

To sustain cooperation, the incumbent has to compromise with the opposition to keep cooperation profitable for the latter. Because compromise is socially costly, efficiency requires the incumbent to compromise at little as possible. This implies that efficiency, that is, maximizing the total surplus the two parties share, is equivalent to optimality for the initial incumbent, that is, maximizing the initial incumbent's payoff subject to making cooperation individually rational for the initial opposition.

Corollary 1. *For each $i \in \{0,1\}$, the program (P) admits a unique solution $(\overline{u}_i, \underline{u}_{1-i})$ and for any $\sigma \in \Sigma^*$,*

$$U_i(\sigma|I_0 = i) = \overline{u}_i$$
$$U_{1-i}(\sigma|I_0 = i) = \underline{u}_{1-i}.$$

The social cost of compromise gives rise to two norms of power alternation that would endogenously emerge and govern the pattern of power alternation in any efficient equilibrium. These norms correspond to the second and third points in Theorem 3.

The second part of Theorem 3 shows how would power alternation happen in efficient equilibria. If a pair of self-enforcing continuation values is on the frontier of an incumbency and is attained with power alternation, then the continuation value of the incumbent must be equal to its reservation value. This implies that whenever power alternation occurs on the path of play in an efficient equilibrium, the incumbent expects its reservation value right before abdicating. It is indifferent between whether to abdicate and play the continuation equilibrium under the other party's incumbency or to refuse abdication and permanently switch to its outside option. Hence, right after power alternation, the abdicating incumbent, say party i, must receive the equilibrium payoff of

$$\underline{u}_i + \frac{1-\delta}{\delta}k,$$

which exactly compensates the transition cost of power alternation it has incurred at the moment of abdication.

Because of the social cost of compromise, maximizing the total surplus right after power alternation requires the inaugurating incumbent at the beginning of its new incumbency to compromise as little as possible with the abdicating incumbent. The inaugurating incumbent should compromise just enough to make the abdicating incumbent willing to yield power. Therefore, efficiency does not only coincide with the optimality for the initial incumbent,

it also requires optimality for every new incumbent subject to its predecessor's incentive compatibility to abdicate.

This implies that power alternation in efficient equilibria is guided by a *norm of almighty inauguration*, which can be understood as a "bargaining protocol" between the two parties amid the process of power alternation that maximizes the bargaining power of the inaugurating incumbent, making it "almighty." Specifically, the bargaining protocol first has the inaugurating incumbent propose a continuation equilibrium under the new incumbency after power alternation and then has the abdicating incumbent to choose to accept the proposal and subsequently play the proposed continuation equilibrium or reject the proposal and subsequently receive its reservation value. Under this bargaining protocol, the inaugurating incumbent would maximize its own equilibrium payoff by making the abdicating incumbent indifferent.

Corollary 2. *For any $\sigma \in \Sigma^*$, any $i \in \{0,1\}$, and any $h^t \in \mathcal{H}$ on the equilibrium path of σ such that $t \geq 1$ and $I_{t-1} \neq I_t = i$,*

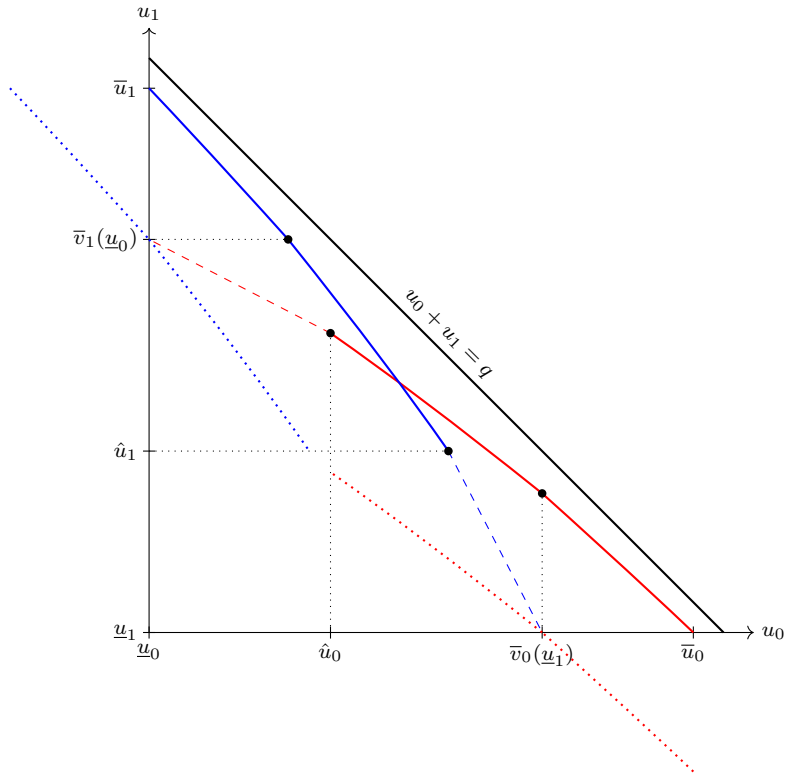
$$U_i(\sigma|h^t) = \overline{v}_i(\underline{u}_{1-i})$$
$$U_{1-i}(\sigma|h^t) = \underline{u}_{1-i} + \frac{1-\delta}{\delta}k.$$

The third part of Theorem 3 shows when would power alternation happen in efficient equilibria. A pair of self-enforcing continuation values is on the frontier of party i is attained without power alternation if and only if the continuation value of the incumbent, party i, is at least $\hat{u}_i$. Recall that $\hat{u}_i$ is the lowest possible equilibrium payoff party i can receive under cooperation when holding power. This implies that on the path of play in an efficient equilibrium, party i when holding power would not abdicate, unless and until it expects a continuation value below $\hat{u}_i$, for which cooperation is no longer sustainable if the continuation play happens under its own incumbency.

There are two ways the incumbent can compromise with the opposition to sustain cooperation: sharing revenue within-period or alternating power intertemporally. Because revenue sharing is socially costless and power alternation is associated with a transition cost $k > 0$, efficiency requires the incumbent to rely on revenue sharing to compromise with the opposition as much as possible before abdicating, postponing the transition cost of power alternation as further as possible into the future.

This implies that power alternation in efficient equilibria is guided by a *norm of backloaded abdication*. For efficiency and, therefore, the common good of the two parties, power must persist and every incumbent must have the "greed for power"—they must keep holding onto power until abdication is necessary to sustain cooperation.

Figure 2: Continuation value frontiers



The last two points in Theorem 3 help further elaborate the shapes of the two continuation value frontiers, as illustrated in Figure 2. In particular, $\overline{v}_1$ must contain a line segment that connects $(\hat{u}_0, v_1(\hat{u}_0))$ and $(\underline{u}_0, \overline{v}_1(\underline{u}_0))$, while $\overline{v}_0$ must contain a line segment that connects $(v_0(\hat{u}_1), \hat{u}_1)$ and $(\overline{v}_0(\underline{u}_1), \underline{u}_1)$. Continuation values on the interior of these line segments are attained with randomizations that assign positive probabilities on power alternation.

5.3. Efficiency and dynamics of power alternation

According to Lemma 2 and Theorem 3, payoffs the two parties receive on the path of play in an efficient equilibrium always lies on the continuation value frontier of the current incumbency, I, with the incumbent's payoff bounded above $\hat{u}_I$. Therefore, the dynamics in any efficient equilibrium can be fully characterized by the trajectory of a state vector (I, u_I), where $I \in \{0, 1\}$ indicates the current incumbency and $u_I \in [\hat{u}_I, \overline{u}_I]$ indicates the equilibrium payoff of the incumbent.[16] The equilibrium payoff of the opposition given (I, u_I) must be $\overline{v}_{1-I}(u_I)$. The incumbent's equilibrium payoff u_I can be interpreted as its level of *legitimacy*: the lower u_I, the closer it falls to $\hat{u}_I$, the sooner the incumbent is

[16]For each on-path history $h^t \in \mathcal{H}$, (I_t, u_{I_t}) is a sufficient statistic: the continuation on-path depends on h^t only via (I_t, u_{I_t}).

expected to abdicate.

For each i, consider three functions,

$$\begin{aligned}\chi_i &: [\hat{u}_i, \overline{u}_i] \to [0,1] \\ \Gamma_i = (\Gamma_i^0, \Gamma_i^1) &: [\hat{u}_i, \overline{u}_i] \to [\underline{u}_i, \overline{u}_i]^2 \\ \alpha_i = (\alpha_i^0, \alpha_i^1) &: [\hat{u}_i, \overline{u}_i] \to [0,1]^2,\end{aligned}$$

that respectively keep track of the evolution of revenue sharing, legitimacy, and incumbency. Consider any period under party i's incumbency. First, given party i's level of legitimacy u_i at the beginning of that period, it promises to share $x = \chi_i(u_i) \in [0,1]$ with party $1-i$. Second, depending on whether the regime generates revenue in that period, r, and thus whether party i honors its promise, it expects the continuation value of $\Gamma_i^r(u_i) \in [\underline{u}_i, \overline{u}_i]$. Correspondingly, party $1-i$ expects the continuation value of $\overline{v}_{1-i}(\Gamma_i^r(u_i))$. Third and most importantly, depending on whether the regime generate revenue in that period, r, party i abdicates, so that transition to party $1-i$'s incumbency occurs, with probability $\alpha_i^r(u_i)$.

Note that with the bang-bang property (Abreu et al., 1990), it suffices to characterize χ_i, Γ_i, and α_i for all $u_i \in \mathcal{U}_i$, where for each i,

$$\mathcal{U}_i := \left\{ u_i \in [\hat{u}_i, \overline{u}_i] : u_i \geq \hat{u}_i, (u_i, \overline{v}_{1-i}(u_i)) \in \text{ext}(\overline{\mathcal{E}}_i) \right\}.$$

By definition, for each $u_i \in [\hat{u}_i, \overline{u}_i]$, $(u_i, \overline{v}_{1-i}(u_i))$ is an extreme point of $\overline{\mathcal{E}}_i$ if and only if $u_i \in \mathcal{U}_i$.

Proposition 3. *For each $i \in \{0,1\}$ and each $u_i \in \mathcal{U}_i$, when party i holds power and has the legitimacy of u_i, $(I, u_I) = (i, u_i)$,*

1. *party i promises to share with party $1-i$ the revenue of*

$$\chi_i(u_i) = \min\left\{ \frac{(1-\delta)q + \delta\overline{u}_i - u_i}{1-\delta}, 1 \right\} > 0;$$

2. *depending on whether the regime generates revenue, $r \in \{0,1\}$, party i's continuation value is*

$$\begin{aligned}\Gamma_i^0(u_i) &= \frac{u_i - (1-\delta)q}{\delta} < u_i \\ \Gamma_i^1(u_i) &= \frac{u_i - (1-\delta)q + (1-\delta)\chi_i(u_i)}{\delta} \geq u_i;\end{aligned}$$

3. *depending on whether the regime generates revenue, $r \in \{0,1\}$, party i abdicates with*

probability

$$\alpha_i^0(u_i) = \max\left\{\frac{\hat{u}_i - \Gamma_i^0(u_i)}{\hat{u}_i - \underline{u}_i}, 0\right\}$$
$$\alpha_i^1(u_i) = 0$$

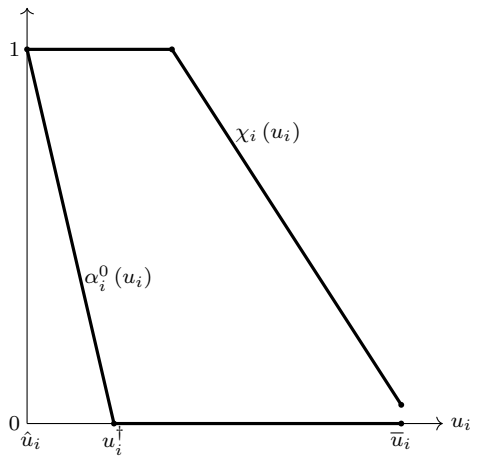
and $\alpha_i^0(u_i) > 0$ *if and only if*

$$u_i < u_i^\dagger := (1-\delta^2)q + \delta^2 \underline{u}_i.$$

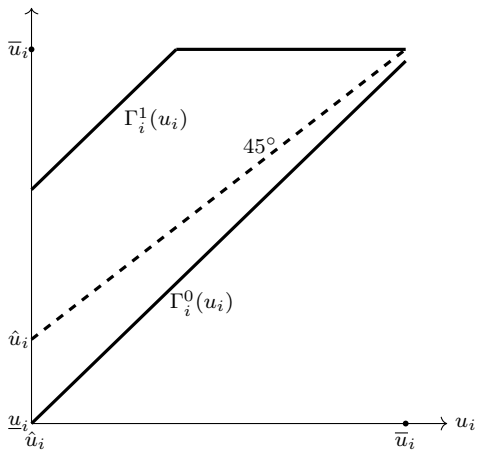
Proposition 3 provides a full characterization of the dynamics on the path of play in any efficient equilibrium, illustrated in Figure 3. First, the incumbent always employs revenue sharing to compromise with the opposition. Whenever in power, party i promises to share a positive amount of revenue, $\chi_i(u_i) > 0$, with party $1-i$, which varies depending on party i's current level of legitimacy. Because χ_i is decreasing, the more legitimate party i, the less generous the promise.

Figure 3: Dynamics in efficient equilibria

(a) Revenue sharing and power alternation



(b) Legitimacy



Second, legitimacy is expected to diminish when the regime fails to generate revenue, $\Gamma_i^0(u_i) < u_i$, following which the incumbent fails to share revenue with the opposition. In contrast, legitimacy is expected to improve when the regime generates revenue, $\Gamma_i^1(u_i) \geq u_i$, following which the incumbent shares the promised amount of revenue with the opposition. Interestingly, $\Gamma_i^1(u_i) = \overline{u}_i$ holds if and only if $u_i \geq -(1-\delta)(1-q) + \delta\overline{u}_i$. Hence, when the incumbent is sufficiently legitimate, it is able to fully restore its legitimacy to the highest possible level $\overline{u}_i$ once fulfilling its promise. If $u_i < -(1-\delta)(1-q) + \delta\overline{u}_i$, then $\chi_i(u_i) = 1$ and $\Gamma_i^1(u_i) < \overline{u}_i$. Hence, when the incumbent is sufficiently illegitimate, it promises to concede

all the revenue the regime generates to the opposition, yet is only able to partially restore its legitimacy after fulfilling such a generous promise.

Third, the incumbent never abdicates when the regime generates revenue, $\alpha_i^1(u_i) = 0$, following which the incumbent fulfills its promise to the opposition; while when the regime fails to generate revenue, preventing the incumbent from honoring its promise, it abdicates with a positive probability, $\alpha_i^0(u_i) > 0$, if and only if it has a sufficiently low level of legitimacy, $u_i < u_i^\dagger$. These results are driven by the norm of backloaded abdication. Given that the incumbent is already legitimate enough to sustain cooperation with the opposition, $u_i \geq \hat{u}_i$, it can only become more legitimate to do so after fulfilling its promise, $\Gamma_i^1(u_i) \geq u_i \geq \hat{u}_i$. Similarly, if incumbent is even more legitimate, $u_i \geq u_i^\dagger$, its level of legitimacy would still be sufficiently high to have cooperation sustained under its own incumbency even after failing its promise, $\Gamma_i^0(u_i) \geq \hat{u}_i$. In either case, the norm of backloaded abdication requires the incumbent to hold onto power. However, if the incumbent is not that legitimate, $u_i < \hat{u}_i$, then after failing to share the promised amount of revenue with the opposition, its legitimacy would fall below the threshold to have cooperation sustained under its own incumbency, $\Gamma_i^0(u_i) < \hat{u}_i$. In this case, the incumbent must have a nontrivial probability to abdicate, so as to continue cooperating with the opposition.

To summarize, recall that the incumbent has two ways to compensate the opposition for its cooperation: revenue sharing and power alternation. By Theorem 1, relying only on revenue sharing ultimately leads to the termination of cooperation. By Proposition 2, relying only on power alternation is Pareto dominated and thus inefficient, so long as power alternation entails any nontrivial transition cost. Therefore, as shown in Proposition 3, the incumbent always employs both revenue sharing and power alternation to compromise with the opposition in any efficient equilibrium. In particular, the incumbent promises to share various amounts of revenue depending on its level of legitimacy, expecting its legitimacy to decline whenever the promise is broken and to recover whenever the promise is honored. Decreases in the level of legitimacy, in turn, result in more generous promises of revenue sharing. The incumbent continues relying only on revenue sharing to compromise with the opposition until experiencing consecutive breaches of promises, after which its level of legitimacy falls too low, so that power alternation becomes necessary for cooperation.

5.4. Three types of political dynamics

According to Proposition 3, in any period party i has a sufficiently high level of legitimacy, $u_i \geq u_i^\dagger$, it suffers no risk of losing power no matter whether the regime succeeds or fails to generate revenue. In this case, we referred to party i's incumbency as "*hegemonic*." In

contrast, with a sufficiently low level of legitimacy, $u_i < u_i^\dagger$, party i has a positive probability to lose power after a single failure to share revenue. In this case, we referred to party i's incumbency as "*precarious*." In what follows, we further elaborate the political dynamics in efficient equilibria under the assumption of symmetry.

Assumption 3. $\underline{u}_0 = \underline{u}_1 = \underline{u}$.

With symmetry, the subscripts that indicate party identities can be omitted. Moreover, we show that depending on two criteria, three qualitatively different types of political dynamics could endogenously emerge in efficient equilibria.

The first criterion concerns the existence of hegemonic incumbency. The highest level of legitimacy each incumbency can ever achieve is $\overline{u}$. Hence, hegemonic incumbency exists if and only if

$$\overline{u} \geq u^\dagger.$$

If $\overline{u} < u^\dagger$ instead, hegemonic incumbency is impossible. In this case, every incumbency is precarious, so that power alternation could happen in each period as it would occur with positive probability whenever the regime fails to generate revenue. The resulting power dynamic, therefore, is *unstable*. This type of political dynamic is illustrated in Figure 4a.

The second criterion concerns whether or not each new incumbency begins as hegemonic right after power alternation. According to Corollary 2, each new incumbent's level of legitimacy right after power alternation is $\overline{v}(\underline{u})$. Hence, each new incumbency is hegemonic if and only if

$$\overline{v}(\underline{u}) \geq u^\dagger.$$

Note that due to the social cost of compromise,

$$\underline{u} + \overline{v}(\underline{u}) < \overline{u} + \overline{v}(\overline{u}) = \overline{u} + \underline{u},$$

so that

$$\overline{v}(\underline{u}) < \overline{u}$$

and thus $\overline{v}(\underline{u}) \geq u^\dagger$ implies $\overline{u} \geq u^\dagger$. Hence, if $\overline{v}(\underline{u}) \geq u^\dagger$, not only is hegemonic incumbency possible, every new incumbency begins as hegemonic. In this case, power alternation never happens consecutively: the incumbency in any period right after power alternation is hegemonic, so that power alternation would not occur in that period regardless of whether the regime generates revenue. The resulting political dynamic, therefore, is *stable*. This type of political dynamic is illustrated in Figure 4b.

The third and most interesting case is when

$$\overline{v}(\underline{u}) < u^{\dagger} \leq \overline{u}.$$

In this case, each new incumbency has too low a level of legitimacy to begin as hegemonic, but because hegemonic incumbency does exist, each has the potential to stabilize into a hegemony. This political dynamic, therefore, is referred to as *stabilizable*. Under this type of political dynamic, a new incumbency is always precarious and vulnerable: a single failure to share revenue could force the incumbent to abdicate from its newly achieved incumbency. Nevertheless, if the new incumbent is fortunate enough to have the regime consistently succeeds to generate revenue around its inauguration, it would gradually build up its hegemony, after which it suffers no immediate risk of losing power. As a result, the stabilizable political dynamic, as illustrated in Figure 4c, features cycles between "stable phases" in which one of the two parties successfully establishes a hegemony and thus firmly holds onto power and "unstable phases" in which neither party succeeds in forging a hegemony and power frequently alternates.

Proposition 4. *If $k \leq k^{\dagger}$, where $k^{\dagger} > 0$, then there are $\underline{u}^{L}, \underline{u}^{H}, \underline{u}^{*}$ such that*

$$0 < \underline{u}^{L} \leq \underline{u}^{H} \leq \underline{u}^{*} < \frac{\delta q}{1+\delta}$$

and

1. *if $\underline{u} \in (\underline{u}^{H}, \underline{u}^{*})$, then $\overline{u} < u^{\dagger}$ and unstable political dynamic arises in efficient equilibria;*[17]

2. *if $\underline{u} \in (\underline{u}^{L}, \underline{u}^{H}]$, then $\overline{v}(\underline{u}) < u^{\dagger} \leq \overline{u}$ and stabilizable political dynamic arises in efficient equilibria;*

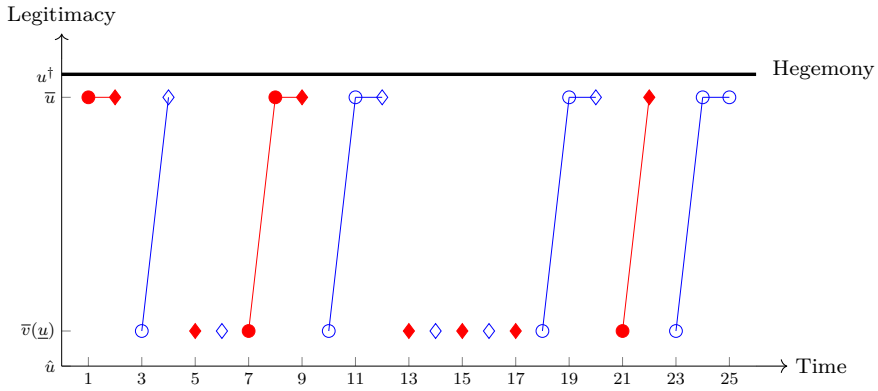
3. *if $\underline{u} \leq \underline{u}^{L}$, then $\overline{v}(\underline{u}) \geq u^{\dagger}$ and stable political dynamic arises in efficient equilibria.*

Proposition 4 shows that that which of the three types of political dynamics arise in efficient equilibria depends on the reservation value the two parties receive from their outside options, $\underline{u}$, which inversely measures their *need for cooperation*. The worse the reservation value, the more the need for cooperation, and the better able the two parties are to sustain cooperation. Hence, when $\underline{u}$ decreases, on the one hand, the initial incumbent needs to compromise less with the initial opposition to have cooperation start, so that $\overline{u}$ is larger. On

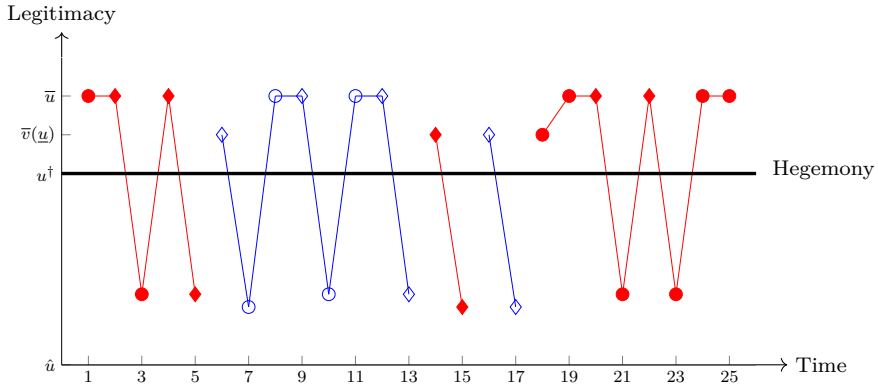
[17] Under Assumption 3, $\underline{u} > \underline{u}^{*}$ is equivalent to $k > k^{*}$, so that all efficient equilibria have power entrenchment if $\underline{u} > \underline{u}^{*}$.

Figure 4: Types of political dynamics

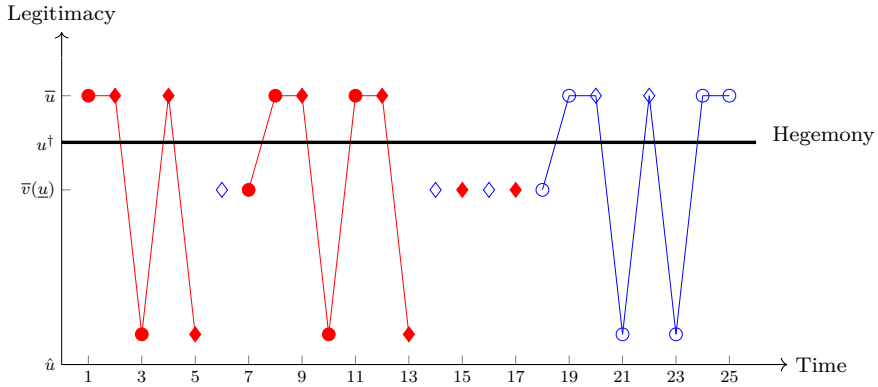
(a) Unstable



(b) Stable



(c) Stabilizable



Notes: Dots represent periods with revenue, while diamonds indicate periods with no revenue. Different colors correspond to different incumbents. Points connected by solid lines belong to the same incumbency. All three figures are based on an identical sequence of revenue generation, allowing for a controlled comparison across different types of political dynamics.

the other hand, every new incumbent needs to compromise less to make abdication incentive compatible for its predecessor, so that $\overline{v}(\underline{u})$ is larger. Consequently, the political dynamic is stable when the two parties have extremely bad outside options, so that $\underline{u} \leq \underline{u}^L$. Unstable political dynamic emerges when the two parties have some need for cooperation, enough to sustain it in the long run, but not that much, so that $\underline{u}^H < \underline{u} \leq \underline{u}^*$. At last, stabilizable political dynamic arises when the two parties have mediocre outside options, neither too good nor too bad, so that $\underline{u}^L < \underline{u} \leq \underline{u}^H$.

6. The Whig-Tory alternation in Britain, 1688-1830

6.1. Why Britain?

To empirically substantiate the paper's theoretical claims, this section examines the British case, in which party alternation between Whigs and Tories began to emerge as a feature of parliamentary politics in the eighteenth century (Brewer, 1976; Hill, 1976). As Skjönsberg (2021) writes, "the British case study has always and rightly been central" to the study of party. Through imperial legacies and institutional imitation, the Westminster model has further become a prevailing model for representative politics worldwide (Darwin, 2012; Lijphart, 1999).

Unlike in the twentieth century and beyond—when regular alternation of parties in government came to be regarded as central to democratic governance—eighteenth-century observers viewed parties with deep suspicion (Brewer, 1976; Hofstadter, 1969; Skjönsberg, 2021). The roots of British party politics lay in seventeenth-century conflicts over political, religious, and economic power—especially the tensions between monarchy and Parliament, the Anglican Church and dissenting Protestants, and landed and mercantile interests (Harris, 2006; Jones, 1961; Pincus, 2009). As a result, early commentators often condemned parties as dangerously divisive, advancing partial and self-interested agendas at the expense of national unity (Bolingbroke, 1738; Madison, 1787; Swift, 1711). Yet despite persistent efforts to discredit party organization, political parties proved functionally indispensable and gradually became enduring features of parliamentary life (Madison, 1787; O'Gorman, 1989; Plumb, 1967). This paper argues that stable cooperation between opposing parties—Whigs and Tories—was sustained through informal, self-enforcing norms of alternation. These included tacit agreements to rotate office, strategic co-optation, and voluntary resignation when conditions became untenable. Such norms were shaped less by formal rules than by pragmatic incentives and shared understandings of long-term interest. As these practices gained traction, political theorists began to reassess the moral and civic value of parties. Party contestation was increasingly celebrated as a vital part of

democratic order—embodying pluralism, restraining arbitrary power, and advancing the public good through disciplined and constructive contestation (Burke, 1770; Dahl, 1971; Montesquieu, 1750).

6.2. Why 1688-1830?

The Glorious Revolution of 1688 marked a turning point in British politics, as ministerial survival came increasingly to depend on parliamentary confidence rather than royal favor (Harris, 2006; Pincus, 2009). Electoral participation, however, remained highly restricted, with outcomes shaped largely by elite control and patronage (O'Gorman, 1989). The Septennial Act of 1716 further entrenched parliamentary dominance and helped create a political oligarchy—'a closed, elite-dominated political system' that persisted until the franchise reforms of the 19th century (Holmes and Szechi, 1993; Plumb, 1967). After the 1830s, the traditional Whig–Tory alignment gradually gave way to a more structured party system, characterized by expanded suffrage, regularized elections, and more disciplined Liberal and Conservative parties (Pugh, 2002). This chapter focuses on the period from 1688 to 1830 to trace the early, informal, and less institutionalized development of norms surrounding party-based alternation of power.

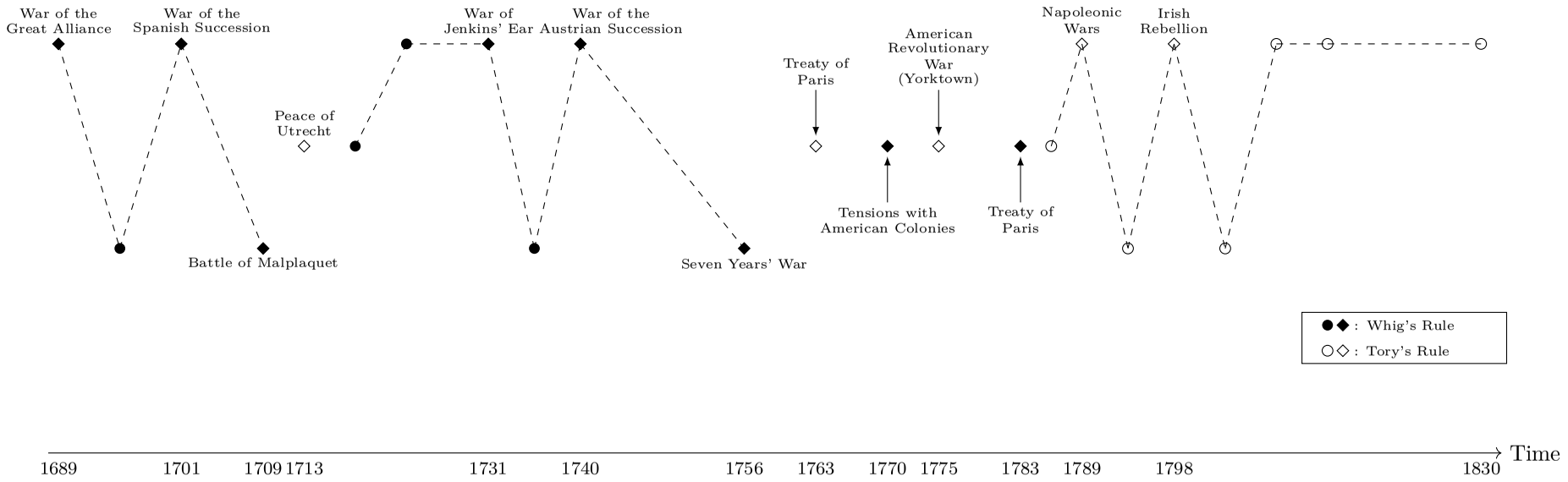
6.3. History meets the model

Britain navigated a volatile geopolitical environment shaped by war and imperial expansion between 1688 and 1830. It rose to global prominence—culminating in victory in the Seven Years' War—only to suffer the profound loss of the American colonies soon after (Colley, 1992; Simms, 2008). In this context, the ruling party, entrusted with policymaking, warfare, and diplomacy, often operated under a veil of secrecy justified by national security concerns.[18] This exacerbated information asymmetries between the ruling and opposition parties. At the same time, rapid territorial and commercial expansion vastly increased the ruling party's control over patronage offices, contracts, and rewards, thereby strengthening its distributive power (Brewer, 1976, 1989).[19] These structural

[18] According to Simms (2008), when Pulteney called for the creation of a select committee to inspect the papers, the Walpole administration claimed "Parliament ought in no case to call for those papers which may contain secrets, the publishing whereof might be of signal disadvantage to the commonwealth. The danger was that publication of secret documents might perhaps open new sores and give offence to some powers with whom we have at present a good understanding."

[19] Brewer (1976) elaborates: "Growing wealth, frequent wars and the acquisition of an empire had created an enormous executive, and thereby enormous powers of patronage for the government. Sectarian and particular interests - notably those of financiers, merchant contractors and stock-jobbers - were tied to administration. Similarly placemen - Treasury officials, members of the diplomatic and colonial services - as well as pensioners, courtiers and members of the armed forces were dependent for at least part of their

Figure 5: The Whig-Tory Alternation in England, 1688-1830



imbalances constrained the opposition's capacity for effective oversight and counterbalance. Its primary leverage lay in the ability to withhold trust when revenue targets were unmet, along with the ultimate threat of exiting the relationship—especially when historical precedents such as the Civil War and the Glorious Revolution suggested that better reservation values might be attainable through alternative arrangements. Such mechanisms proved effective because both sides had high stakes in preserving cooperation during the rise of the nation-state. Later historical developments closely align with the theoretical predictions: incoming parties bargained for favorable cabinet terms, fragile governments co-opted opposition to survive, and persistent revenue failures precipitated resignations. The model's welfare implications likewise correspond to historical experience: Britain prospered under stable single-party rule (Langford, 1989; Plumb, 1967), whereas rapid alternation took a toll on national welfare (Mackesy, 1965; O'Shaughnessy, 2020), as frequent turnover was itself costly.[20]

The first age of party politics in Britain lasted from the Glorious Revolution of 1688 to the death of Queen Anne in 1714. Political life began to coalesce into a two-party system, with Whigs and Tories alternating in control of key government positions (Holmes, 1967; Jones, ed, 1987). Distinct patterns of party behavior began to emerge. The Whigs championed Britain's fiscal-military state and advocated an active role in European diplomacy and warfare, particularly to maintain the continental balance of power (Pincus, 2009). The Tories, grounded in the outlook of the landed gentry, were generally more skeptical of continental entanglements and placed greater emphasis on colonial interests (Colley, 1982; Swift, 1711). They often accused the Whigs of waging unnecessary wars and of using fiscal extraction and financial schemes to serve private interests.[21] Ministries from both parties could collapse when they failed to justify their handling of foreign policy: the Duke of Marlborough, a prominent Whig, gained national acclaim in the early stages of the War of the Spanish Succession but lost support as military fortunes declined; his Tory successors, who sought peace, were discredited by secret and allegedly corrupt negotiations with France (Gregg, 1980). Although the monarch retained the final authority to appoint and dismiss ministers, parliamentary support or opposition increasingly shaped those decisions (Holmes, 1967; Jones, ed, 1987).

livelihood upon the good offices of the Crown."

[20] Simms (2008) comments on the politics under early George III: "Constant changes of ministry, and especially of secretaries of state for foreign affairs, was extremely disruptive. It contrasted sharply with the stability of the early eighteenth century. Thus the Duke of Newcastle ran the Southern Department for more than twenty years between the mid 1720s and the mid 1740s; there were seven Southern Secretaries in the 1760s, four of them in 1765–6 alone."

[21] Swift, a Tory-leaning commentator, described the system as "a racket that worked against the Tories' 'landed interest' while enriching the Whigs' 'moneyed interest.'"

The Hanoverian succession in 1714 ushered in a new political era. The Tories, tainted by suspicions of Jacobite sympathies, were largely sidelined, while the Whigs entered an extended period of dominance (Plumb, 1967). Cabinet politics came to revolve around rival Whig factions, while the Tories retained a strong parliamentary presence and continued to contest government policy (Colley, 1982). This culminated in the long tenure of Robert Walpole (1721–1742), who presided over a period of unusual stability in British politics (Plumb, 1967). Yet his cautious diplomacy during the War of Jenkins' Ear, combined with military setbacks, provoked accusations that he had neglected national interests. As Tory critics joined forces with disaffected Whigs, his parliamentary majority collapsed, compelling his resignation and reinforcing the norm that ministers must retain parliamentary confidence (Plumb, 1956). Wartime controversy likewise toppled Walpole's successors: Lord Carteret, over commitments in the War of the Austrian Succession; the Duke of Newcastle, after the loss of Minorca in 1756; and William Pitt, for pressing to confront Spain during the Seven Years' War (Simms, 2008).

Tory fortunes revived in the late 18th century, largely due to George III's distrust of the entrenched Whig elite and his desire to reassert royal influence (Brewer, 1976; Colley, 1982). He appointed Lord Bute, his close confidant, who, however, resigned within a year amid criticism of the Treaty of Paris (1763). From the 1760s to the 1780s, revolutionary unrest in the American colonies and mounting domestic demands for reform contributed to frequent cabinet turnover, and two key norms emerged during this period (Colley, 1992). First, incoming ministers increasingly demanded control over cabinet formation upon taking office—Pitt the Elder famously refused to serve without full discretion over appointments, and the Rockingham Whigs insisted on party-line coherence in cabinet selection (Brewer, 1976).[22] Second, during crises ministers often forged cross-party coalitions to distribute patronage and maintain majority support——such as in the Fox–North coalition (1783), the Pittite alliance (1784), the Ministry of All the Talents (1806), and Canning's coalition (1827). This period made clear that a cabinet's survival depended on parliamentary confidence rather than royal favor, as illustrated by the fates of Bute and North (Brewer, 1973; Christie, 1958). Although the Tories enjoyed political dominance from the 1780s to the 1820s—likely sustained by fears of French republicanism (Burke, 1790; Colley, 1992)—the institutional foundations of party contestation were already firmly in place. The Whigs returned to the

[22] Brewer (1976) documents how "Pitt's reluctance to deal with anyone but the king, and then only if he was given carte blanche (i.e., complete freedom to act), had finally paid dividends. The king gave him total control over the new administration; he was generalissimo (i.e., supreme commander) once more." He also suggests that "Rockingham's conduct during the abortive negotiation of 1780, and again at the foundation of the Rockingham administration of 1782, was dominated by the desire to ensure party hegemony within any new ministry"; if the party could not design "a clean sweep to force," it would instead opt for "refusal to come into power."

center of power in the 1830s with the passage of the Reform Act of 1832, initiating a new phase in British party politics (Gash, 1960).

7. Conclusion

At the heart of all political systems lies a repeated trust game between those who govern and those who are governed. This trust is often strained by two structural impediments faced by rulers: the hold-up problem and information asymmetry. A rich body of literature explores how formal institutional mechanisms—such as constitutions (North and Weingast, 1989), courts (Myerson, 2008), and electoral processes (Fearon, 2011)—can mitigate these frictions and foster enduring cooperation. In this paper, we complement these insights by examining how certain informal norms—specifically, power alternation—have historically emerged as self-enforcing and socially efficient solutions.

Unlike formal business contracts enforced by third parties, political relationships are typically governed by informal, self-enforcing arrangements. These are best understood as relational contracts—agreements sustained by repeated interactions and mutual interest. Our theory adapts this approach from organizational economics to interpret early democratic politics, capturing the historically contingent dynamics of compromise and power transition as an equilibrium process.

This account resonates with early democratic theorists, who held distinct views on the normative foundations of stable democracy. Schumpeter (1942) emphasized intertemporal power alternation, wherein the ruling party exercises sole authority while the opposition awaits its turn. By contrast, Kelsen (1929) underscored within-period compromise, typically realized under proportional representation through coalition governments. Our theoretical findings affirm and synthesize both views: while power alternation is sufficient to sustain cooperation over time, within-period compromise is necessary for achieving efficiency.

We believe that this paper contributes to key debates in both the normative and theoretical literatures. At the same time, it raises more questions than it answers. For instance: How do formal institutions emerge from informal norms over time? Under what conditions do formal institutions—such as elections or constitutional constraints—complement, rather than undermine, informal norms? And how does the strategic dynamic change when more than two actors or parties participate in the game? These questions point to a broader research agenda. By highlighting the historically contingent nature of institutional evolution, we hope this paper encourages further inquiry into the long-term interplay between formal rules and informal arrangements across diverse political contexts.

References

Abdulkadiroglu, Atila and Kyle Bagwell, "Trust, Reciprocity, and Favors in Cooperative Relationships," *American Economic Journal: Microeconomics*, 2013, *58* (5), 213–259.

Abreu, Dilip, "On the Theory of Infinitely Repeated Games with Discounting," *Econometrica*, 1988, *56* (2), 383–396.

_ **, Benjamin Brooks, and Yuliy Sannikov**, "Algorithms for Stochastic Games with Perfect Monitoring," *Econometrica*, 2020, *88* (4), 1661–1695.

_ **, David Pearce, and Ennio Stacchetti**, "Toward a Theory of Discounted Repeated Games with Imperfect Monitoring," *Econometrica*, 1990, *58* (5), 1041–1063.

Acemoglu, Daron, "Why not a Political Coase Theorem? Social Conflict, Commitment, and Politics," *Journal of Comparative Economics*, 2003, *31*, 620–652.

_ **and James A. Robinson**, "Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective," *Quarterly Journal of Economics*, 2000.

_ **and** _ , "A theory of political transitions," *American Economic Review*, 2001, *91* (4), 938–963.

_ **and** _ , *Economic Origins of Dictatorship and Democracy*, Cambridge University Press, 2006.

_ **and** _ , "Persistence of Power, Elites, and Institutions," *American Economic Review*, 2008, *98* (1), 267–293.

_ **, Georgy Egorov, and Konstantin Sonin**, "Coalition Formation in Non-Democracies," *Review of Economic Studies*, 2008, pp. 987–1009.

_ **,** _ **, and** _ , "Dynamics and Stability of Constitutions, Coalitions, and Clubs," *American Economic Review*, 2012, pp. 1446–1476.

_ **,** _ **, and** _ , "Political Economy of a Changing World," *Journal of Political Economy*, 2015, pp. 1038–1086.

_ **, Mikhail Golosov, and Aleh Tsyvinski**, "Power fluctuations and political economy," *Journal of Economic Theory*, 2011, *146* (3), 1009–1041.

Acharya, Avidit, Elliot Lipnowski, and João Ramos, "Political Accountability under Moral Hazard," *American Journal of Political Science*, 2025, *69* (2), 641–652.

Aguiar, Mark and Manuel Amador, "Growth in the Shadow of Expropriation," *The Quarterly Journal of Economics*, 2011, *126* (2), 651–697.

Ales, Laurence, Pricila Maziero, and Pierre Yared, "A theory of political and economic cycles," *Journal of Economic Theory*, 2014, *153*, 224–251.

Alesina, Alberto, "Credibility and Policy Convergence in a Two-Party System with Rational Voters," *American Economic Review*, 1988, *78* (4), 796–805.

Ansell, Ben and David Samuels, *Inequality and Democratization*, Cambridge University Press, December 2014.

Atkeson, Andrew, "International Lending with Moral Hazard and Risk of Repudiation," *Econometrica*, 1991, *59* (4), 1069–1089.

Baker, George, Robert Gibbons, and Kevin Murphy, "Informal Authority in Organizations," *Journal of Law, Economics, and Organization*, 1999, *15* (1), 56–73.

Boix, Carles, *Democracy and Redistribution*, Cambridge University Press, July 2003.

_ **and Milan W Svolik**, "The foundations of limited authoritarian government: Institutions, commitment, and power-sharing in dictatorships," *the Journal of Politics*, 2013, *75* (2), 300–316.

Bolingbroke, Henry St John, *Letters on the Spirit of Patriotism: On the Idea of a Patriot King: And On the State of Parties at the Accession of George III* 1738.

Brewer, John, "The Misfortunes of Lord Bute: A Case-Study in Eighteenth-Century Political Argument and Public Opinion," *The Historical Journal*, 1973, *16* (1), 3–43.

_ , *Party Ideology and Popular Politics at the Accession of George III*, Cambridge University Press, June 1976.

_ , *The Sinews of Power: War, Money and the English State, 1688–1783*, reprint edition ed., Cambridge, Mass: Harvard University Press, 1989.

Burke, Edmund, *Thoughts on the Cause of the Present Discontents*, J. Dodsley, 1770.

_ , *Reflections on the Revolution in France: And on the Proceedings in Certain Societies in London Relative to That Event*, J. Dodsley, 1790.

Cheibub, José Antonio, Jennifer Gandhi, and James Raymond Vreeland, "Democracy and Dictatorship Revisited," *Public Choice*, April 2010, *143* (1-2), 67–101.

Christie, Ian R., *The End of North's Ministry, 1780-1782*, Macmillan, 1958.

Colley, Linda, *In Defiance of Oligarchy: The Tory Party 1714-60*, Cambridge University Press, February 1982.

_ , *Britons: Forging the Nation, 1707-1837*, Yale University Press, 1992.

Cowling, Maurice, *1867 Disraeli, Gladstone and Revolution: The Passing of the Second Reform Bill* Cambridge Studies in the History and Theory of Politics, Cambridge: Cambridge University Press, 1967.

Dahl, Robert A., *Polyarchy: Participation and Opposition*, Yale University Press, 1971.

Darwin, John, *Unfinished Empire: The Global Expansion of Britain*, Allen Lane, 2012.

Delgado-Vega, Álvaro, "Which Side are You on? Interest Groups and Relational Contracts," *Working Paper*, 2025.

_ **and Johannes Schneider**, "Embracing the Enemy," *Working Paper*, 2024.

Dixit, Avinash, Gene Grossman, and Faruk Gul, "The dynamics of political compromise," *Journal of political economy*, 2000, *108* (3), 531–568.

Earle, Timothy, *How chiefs come to power: The political economy in prehistory*, Stanford University Press, 1997.

Fahn, Matthias and Nicolas Klein, "Relational Contracts with Private Information on the Future Value of the Relationship: The Upside of Implicit Downsizing Costs," *American Economic Journal: Microeconomics*, 2019, *11* (4), 33–58.

Fearon, James D., "Self-enforcing democracy," *The Quarterly Journal of Economics*, 2011, *126* (4), 1661–1708.

Ferreira, Daniel and Jin Li, "Governance and management of autonomous organizations," *Working Paper*, 2025.

Finer, Samuel Edward, *The History of Government from the Earliest Times*, Oxford Univerity Press, 1997.

Fuchs, William, "Contracting with repeated moral hazard and private evaluations," *American Economic Review*, 2007, *97* (4), 1432–1448.

Gash, Norman, *Politics in the Age of Peel: A Study in the Technique of Parliamentary Representation, 1830 - 1850*, Longmans, Green, 1960.

Gregg, Edward, *Queen Anne*, Routledge and Kegan Paul, 1980.

Greif, Avner, "Cultural Beliefs and the Organization of Society: A Historical and Theoretical Reflection on Collectivist and Individualist Societies," *Journal of Political Economy*, October 1994, *102* (5), 912–950.

_ , *Institutions and the path to the modern economy: Lessons from medieval trade*, Cambridge University Press, 2006.

Halac, Marina, "Relational contracts and the value of relationships," *American Economic Review*, 2012, *102* (2), 750–779.

_ , "Investing in a Relationship," *RAND Journal of Economics*, 2015, *46* (1), 165–185.

Harris, Tim, *Revolution: The Great Crisis of the British Monarchy, 1685-1720*, Allen Lane, 2006.

Hauser, Christine and Hugo Hopenhayn, "Trading Favors: Optimal Exchange and Forgiveness," *Unpublished*, 2008.

Hill, Brian W., *The Growth of Parliamentary Parties, 1689-1742*, Archon Books, 1976.

Hofstadter, Richard, *The Idea of a Party System: The Rise of Legitimate Opposition in the United States, 1780-1840*, University of California Press, 1969.

Holmes, Geoffrey and Daniel Szechi, *The Age of Oligarchy: Pre-industrial Britain, 1722-1783*, Longman, 1993.

Holmes, Geoffrey S., *British Politics in the Age of Anne*, Macmillan, 1967.

Holmström, Bengt, "Moral hazard in teams," *The Bell journal of economics*, 1982, pp. 324–340.

Hörner, Johannes and Anna Sanktjohanser, "On the Role of Outside Options in Buyer-Seller Relationships," 2025. Working Paper.

_ , **Takuo Sugaya, Satoru Takahashi, and Nicolas Vieille**, "Recursive Methods in Discounted Stochastic Games: An Algorithm for $\delta \to 1$ and a Folk Theorem," *Econometrica*, 2011, *79* (4), 1277–1318.

Huntington, Samuel P., *The Third Wave*, Vol. 199, Norman: University of Oklahoma Press, 1991.

Jones, Clyve, ed., *Britain in the First Age of Party, 1687-1750: Essays Presented to Geoffrey Holmes*, Bloomsbury Academic, 1987.

Jones, James Rees, *The First Whigs: The Politics of the Exclusion Crisis, 1678-1683*, Westport, Conn: Praeger, 1961.

Kelsen, Hans, *The Essence and Value of Democracy*, Plymouth: Rowman and Littlefield, 1929.

Kostadinov, Rumen and Aditya Kuvalekar, "Learning in relational contracts," *American Economic Journal: Microeconomics*, 2022, *14* (1), 284–329.

Langford, Paul, *A Polite and Commercial People: England 1727-1783*, Clarendon Press, 1989.

Leeson, Peter T., *The invisible hook: The hidden economics of pirates*, Princeton University Press, 2009.

Levin, Jonathan, "Relational incentive contracts," *American Economic Review*, 2003, *93* (3), 835–857.

Li, Jin and Niko Matouschek, "Managing conflicts in relational contracts," *American Economic Review*, 2013, *103* (6), 2328–2351.

_ , **Arijit Mukherjee, and Luis Vasconcelos**, "What Makes Agility Fragile? A Dynamic Theory of Organizational Rigidity," *Management Science*, June 2023, *69* (6), 3578–3601.

_ , **Niko Matouschek, and Michael Powell**, "Power Dynamics in Organizations," *American Economic Journal: Microeconomics*, 2017, *9* (1), 217–241.

Liao, Xiaoye and Andrew McClellan, "Intraparty Politics and Dynamic Policy Polarization," *Working Paper*, 2023.

Lijphart, Arend, *Patterns of Democracy: Government Forms and Performance in Thirty-six Countries*, Yale University Press, January 1999.

Lizzeri, Alessandro and Nicola Persico, "Why Did the Elites Extend the Suffrage? Democracy and the Scope of Government, with an Application to Britain's "Age of Reform"*," *The Quarterly Journal of Economics*, May 2004, *119* (2), 707–765.

Luo, Zhaotian, Adam Przeworski, and Hongding Zhu, "Sustaining Democracy under the Shadow of Force," *Working Paper*, 2024.

Mackesy, Piers, *The War for America: 1775-1783*, Harvard University Press, 1965.

Madison, James, "Federalist No. 10," *The Independent Journal*, 1787.

Mailath, George J. and Larry Samuelson, *Repeated Games and Reputations: Long-Run Relationships*, Oxford Univerity Press, 2006.

Miller, David and Joel Watson, "A theory of disagreement in repeated games with bargaining," *Econometrica*, 2013, *81* (6), 2303–2350.

Montesquieu, *The Spirit of Laws* 1750.

Myerson, Roger, "The autocrat's credibility problem and foundations of the constitutional state," *American Political Science Review*, 2008, *102* (1), 125–139.

_ , "Moral Hazard in High Office and the Dynamics of Aristocracy," *Econometrica*, 2015, *83* (6), 2083–2126.

North, Douglass C., *Structure and Change in Economic History*, Norton, 1981.

_ , "Institutions," *Journal of Economic Perspectives*, March 1991, *5* (1), 97–112.

_ **and Barry R. Weingast**, "Constitutions and commitment: the evolution of institutions governing public choice in seventeenth-century England," *The journal of economic history*, 1989, *49* (4), 803–832.

O'Gorman, Frank, *Voters, Patrons, and Parties: The Unreformed Electoral System of Hanoverian England, 1734-1832*, Clarendon Press, 1989.

_ , *The Long Eighteenth Century: British Political and Social History 1688-1832*, Bloomsbury Academic, September 1997.

O'Shaughnessy, Andrew Jackson, *The Men Who Lost America: British Leadership, the American Revolution and the Fate of the Empire*, Yale University Press, August 2020.

Phelan, Christopher and Ennio Stacchetti, "Sequential Equilibria in a Ramsey Tax Model," *Econometrica*, 2001, *69* (6), 1491–1518.

Pincus, Steven, *1688: The First Modern Revolution*, Yale University Press, 2009.

Plumb, John Harold, *Sir Robert Walpole; the Making of a Statesman*, Cresset Press, 1956.

_ , *The Growth of Political Stability in England 1675–1725*, London: Palgrave Macmillan UK, 1967.

Przeworski, Adam, *Democracy and the market: Political and economic reforms in Eastern Europe and Latin America*, Cambridge university press, 1991.

_ , "The Genius of Democracy: Kelsen and Schumpeter," in Sandrine Baume and David Ragazzoni, eds., *Hans Kelsen on Constitutional Democracy: Genesis, Theory, Legacies*, Cambridge University Press, 2025.

_ **, Michael E. Alvarez, José Antonio Cheibub, and Fernando Limongi**, "Classifying Political Regimes," *Studies In Comparative International Development*, June 1996, *31* (2), 3–36.

_ **,** _ **,** _ **, and** _ , *Democracy and Development: Political Institutions and Well-Being in the World, 1950–1990*, illustrated edition ed., Cambridge: Cambridge University Press, August 2000.

Pugh, Martin, *The Making of Modern British Politics: 1867 - 1945*, Wiley, February 2002.

Rayo, Luis, "Relational incentives and moral hazard in teams," *The Review of Economic Studies*, 2007, *74* (3), 937–963.

Roberts, Michael, *The Age of Liberty: Sweden 1719-1772*, Cambridge University Press, October 2003.

Safronov, Mikhail and Bruno Strulovici, "Contestable norms," *University of Cambridge and Northwestern University*, 2018.

Schumpeter, Joseph A., *Capitalism, Socialism, and Democracy*, first edition ed., New York: Harper & Brothers, 1942.

Sima, Qian, *Records of the Grand Historian*, Columbia University Press, 1993.

Simms, Brendan, *Three Victories and a Defeat: The Rise and Fall of the First British Empire*, Basic Books, December 2008.

Skjönsberg, Max, *The Persistence of Party: Ideas of Harmonious Discord in Eighteenth-Century Britain* Ideas in Context, Cambridge: Cambridge University Press, 2021.

Stasavage, David, *The Decline and Rise of Democracy: A Global History from Antiquity to Today*, Princeton Univerity Press, 2020.

Swift, Jonathan, *The Prose Works of Jonathan Swift: The Examiner and Other Pieces Written in 1710-11* 1711.

Thomas, Jonathan and Tim Worrall, "Income Fluctuation and Asymmetric Information: An Example of a Repeated Principal-Agent Problem," *Journal of Economic Theory*, 1990, *51*, 367–390.

Watson, Joel, David Miller, and Trond Olsen, "Relational contracting, negotiation, and external enforcement," *American Economic Review*, 2020, *110* (7), 2153–2197.

Yared, Pierre, "A Dynamic Theory of War and Peace," *Journal of Economic Theory*, 2010, *145*, 1921–1950.

Ziblatt, Daniel, *Conservative Parties and the Birth of Democracy* Cambridge Studies in Comparative Politics, Cambridge: Cambridge University Press, 2017.